This is Gemini Control Houston 27 hours, 44 minutes into the flight. We're one minute away from our adjustment burn phase adjustment burn over Hawaii. The burn again is a 7.7 foot per second burn, using the secondary propulsion system on the Agena. We've noted during the CSQ pass and again over Hawaii, that approximately 36 pounds of fuel remain in the secondary propulsion system and this will force a curtailment of any additional star occultation experiment activity during the next nightside pass. Additional D-5 work had been planned. It is now being scrubbed because of the shortage of control gas in the secondary system in the Agena. Standing by for the burn. We have an SPS ignition. The burn should be completed. Hawaii has verified. The ground said that the burn looked good to them and John Young reports that they have a readouts onboard to show that they made as much as 10 feet per second. Instead of the required 7.7, but that data will be looked at. We'll start this tape now at the beginning of the Hawaii pass and play the complete pass, we are still in contact with Hawaii and the spacecraft directly north of the island. Here is the conversation.

HAW Hawaii has C-band track. O.K., Flight Dog 058, ACS supply pressure .698, ACS supply temperature 39.0 that's dog 070.

HOU Did hear .698.

HAW That's KPSI, roger.

HOU Thank you.

HAW The temperature is 39.0.

HOU Roger.

HAW Gemini 10, Hawaii Cap Com.

S/C Gemini 10, go.

HAW O.K., we'll get you set for this SPS burn. We

HAW would like you to go to FC-7.

S/C Roger.

HAW Need any command numbers?

S/C Negative.

HAW O.K., TM solid, Hawaii, both vehicles are "GO".

HOU Roger.

S/C Hawaii, this is Gemini 10, I don't know if you've noticed it, but we have just noticed a big drop in gas pressure out of that D-5.

HAW Roger, we've got all of that, do you want to stop doing any more D-5's and we'll keep a close look on you ACS. Are you all squared away in your flight control mode 7?

S/C Roger, I think it is squared away.

HAW O.K., I 'll give you a time hace one minute prior to GETB.

S/C Roger.

HAW And you are looking real good down here.

HAW Flight, Hawaii.

HOU Go ahead.

HAW We've got a torque rate on yaw of about three degrees, but the position Gyro is about one half a degree.

HOU Roger. He should be O.K.

HAW O.K., minus one minute time hack in about nine seconds. We're showing you "GO" for the burn. 5, 4, 3, 2, 1, Mark. We will be standing by. SPS ignition, Flight.

HOU Roger.

HAW We have cut off.

HOU Thank you.

HAW O.K., 10 how are you.

S/C 10, go.

HAW It was real good here, how did you do?

S/C We indicate that we made 10 feet per second instead of seven.

HAW Roger, we'll check out the burn time here in the.. on the ground and we'll work it up for you. Do you want them to go back to flight control mode one, Flight?

HOU Affirmed.

HAW O.K., will you turn TM off and then back on again and then go back to flight control mode one.

S/C Roger.

HAW Flight, Hawaii.

HOU Yes.

HAW It appears to me that the burn was just a little bit long.. Delta-T.

HOU Roger.

S/C This is 10,80 was 0002.3, 81 was 0005..it was0005 and 82, minus 0007.

HAW O.K., 80, 0002.3, 81 0005, and 82 was minus 000.. was that 7?

S/C Roger. 0007.

HAW O.K., I have got that.

HOU And 81 should be negative also.

HAW Negative? O.K.

HOU Roger.

HAW All systems LOS in Hawaii.

HOU Copy.

This is Gemini Control in Houston. California should acquire momentarily. There goes the first call out from Houston Cap Com, here. Several people have remarked here on the extraordinary versitility of the Agena which has proved itself being beyond the fondest hope during this period of nearly 24 hours now where it has been the primary system, both in the very descreet small type burns that we just saw over Hawaii and of course the large primary propulsion system burn that we saw last night and earlier today. It is truely a remarkable stable and in all the rates and the performance has been precisely as advertised. We have now the start of the tape of the state side pass, just barely into it. Here is the conversation.

HOU Hawaii, CAP COM, AFD

HAW AFD, Hawaii.

HOU Roger, in your post pass will you put the exact time of the unit two analog recorder for the burn?

HOU Gemini 10, Houston.

S/C Gemini 10.

HOU Roger, we've been looking at your gas consumption down here on D-5 and we've decided to discontinue further D-5, over.

S/C Yes, (garbled) Our problem/to seems be getting better and we don't think looking (garbled) or whatever it is will get to us on the ELSS or the O2 high rate.

HOU Understand. Another question, what does your readings and your SEP attitude gas now?

S/C I can't give it to you right now, the sun is shining in such a manner that I cant't read the panel, stand by and I'll give it to you when I can.

HOU Roger, we confirm your information about the burn, it is slightly greater that 7.7. As we come up on Guaymas they'll call for our fuel cell purge and then following that will be spacecraft power down and there will be some block updates at CSQ and you have got a kind of rest period here.

S/C Very good.

HOU Roger, we are still wondering about this ECS configuration you are in right now. Is it' faceplates open? Number suit fan on and resert valve at 45?

S/C All three things are "GO".

HOU Roger and please keep us advised in the event you decide to change anything.

S/C O.K., we'll tell you Al.

HOU Roger.

TEX Guaymas go remote, California go local.

GYM Guaymas remote

CAL California local.

GYM Guaymas, Flight.

HOU Are you ready for the fuel cell purge?

GYM That's affirmative, Flight.

HOU O.K., let him know that you are ready.

GYM Roger. Gemini 10, Guaymas Cap Com.

S/C 10, Go.

GYM O.K., we are standing by for your fuel cell purge

GYM at this time.

S/C Roger.

END OF TAPE

TEX Guaymas go remote, California go local.

GYM Guaymas remote,

CAL California, local.

HOU Guaymas from Flight.

GYM Go ahead.

HOU Are you ready for the fuel cell purge?

GYM That's affirmative, Flight.

HOU O.K., let him know that you are ready.

GYM Roger. Gemini 10, Guaymas Cap Com.

S/C Guaymas, go.

GYM O.K., Gemini. We're standing by for the fuel cell purge this time.

S/C Roger.

(PAUSE)

HOU Guaymas, you say that you have seen the fuel cell purge?

GYM That's affirmative, Flight.

HOU All right.

GYM Looks good.

HOU Guaymas, let them know that we have a retro block update over the RKV this pass and a flight plan update over CSQ.

GYM RKV PLA update?

HOU And a flight plan and crew status over the CSQ.

GYM Gemini 10, Guaymas Cap Com.

S/C 10, go ahead.

GYM O.K., over RKV over this prime rev. you will have a PLA update and then following over CSQ you will have a flight plan update and a crew status report.

S/C 10, roger.

GYM You are looking real good.

S/C Yes, and we feel real good too, sorry about that this afternoon, but I didn't see any way out of it.

GYM Yes, we agree.

HOU Guaymas don't forget to send your Agena/Gemini summary.

GYM Roger. Do you want anything particular in the AMP?

HOU Just follow the normal things that we've been doing.

GYM Roger.

HOU Guaymas, procedures, don't forget your Agena summary.

GYM O.K., we've just sent those out procedure, we'll send them again.

HOU They haven't got them in the building.

GYM O.K., Guaymas has LOS.

HOU Roger, Guaymas, Guaymas, Flight.

GYM Go, flight.

HOU What was your ASC gas pressure and temperature?

GYM 633 PSI was the ...low pressure and stand by for the temperature. 46.8 degrees, Flight.

HOU Say again.

GYM 46.8 degrees.

HOU 46.8.

GYM Roger.

HOU and 633?

GYM Roger. This is Guaymas have you got those summaries yet?

HOU Say again.

GYM I was wondering if procedure has got those summaries?

HOU I don't know. Yes, he's got them now.

GYM O.K.

This is Gemini Control Houston 28 hours four minutes into the flight and that wraps up the conversation of the spacecraft that swings down over the ismus at Panama and starts out across South America. We are on the 17th revolution, we will begin the 18th revolution in a very few seconds as we cross the 80th parallel. We've been asked to provide a list of all the maneuvers, the times, the feet per second, the vehicle that performed these maneuvers, and the propose.

SPACECRAFT G.E.T.	DELTA-V	VEHICLE	PURPOSE
2:18:09	55.9	Spacecraft	Phasing
2:30:49	9.6	Spacecraft	Plane Change
3:47:34	48.4	Spacecraft	Circularization
4:34	35	Spacecraft	Terminal Phase Initiation
5:06:00	50	Spacecraft	Terminal Phase Final

The times on the Delta-V's, I gave on the last two are approximated because it is during that period when we..when the Gemini 10 spacecraft burned an excessive amount of fuel in performing their rendezvous maneuver. We have no better information and precisely how much fuel went exactly where.

7:38:34	420	Agena	Phasing

(this would have been the first burn with the primary propulsion system.)

20:20:12	334.6	Agena	Height Adjust
22:37:07	74.3	Agena	Circularization
27:45:36	7.7	Agena	Phase Adjust

At the present time, we still read approximately 375 pounds of propellent remaining on the spacecraft. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 28 hours 29 minutes into the flight. Flight going very calmly and very quietly, the eye situation seems to continue to improve. We have the recorded conversation via the RKV. The tape is ready we'll play it for you now.

M/C RKV send us Agena main at acquisition, and LOS please.

RKV Roger.

RKV RKV TM solid Gemini and Agena.

M/C Roger RKV.

RKV Gemini 10, RKV.
We have an up-date for you when you're ready to copy.

S/C Standby. Ready to copy

RKV Roger. All the time on this up-date are based on a set maneuver, of an OAMS burn of 1 00 feet per secnnd, 2 0 minutes prior to retrofire, the retro pitch angle of 2 0 degrees and recommend that you use catch-up mode for the OAMS burn. Area 21-3, 33 32 52, 20 + 39, 26 + 18, weather is good. Area 22-3, 35 13 39, 20 + 34, 26 + 33, weather marginal. Area 23 Delta, 36 10 38, 20 ± 23 25 + 04, weather marginal. Area 24 02 37 48 15, 20 + 22, 25 + 13, weather good. Area 25-2, 39 25 05, 20 + 20,25 + 28, weather good. Area 26-2 41 03 25, 20 + 30, 25 + 50, weather good. Bank angles for all areas (garbled) 9 0. Sep maneuver required on all areas. Did you copy?

S/C Roger, we copied.

RKV We have nothing further on this pass, so I guess this will be our last wake pass with you so we wish you all a good night.

S/C Thank you. Happy dreams.

RKV We'll be watching you while you sleep.

M/C RKV, AC.

RKV Go.

M/C Another Gemini main please.

RKV Roger.

END OF TAPE

This is Gemini Control Houston, 28 hours 49 minutes into the flight. The CSQ will acquire at 28 hours 59 minutes, 10 minutes from now and we should have a flight plan report, a flight plan comparison relayed to them. The Flight Director here Glen Lunney is going over that information with the CSQ. Following that we expect the crew status report over Hawaii, and any additional flight plan up-dates that may have not been covered at CSQ. The crew is in eating period at the present time. The present plans are to knock off activites for the day at such time as 29 hours and 45 minutes to begin about an 9 hour sleep period. This is the present plan. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 29 hours 12 minutes into the flight. We've just completed a very informative pass over the CSQ. The crew in the flight controller room at CSQ covered the major events of the day in an excellent summary. Among other things we've learned that the crew did not cover the S-12 micrometerite package. Located on the adapter of the spacecraft. No problem there, this will be recovered during the EVA exercise tomorrow. We also learned that certain items as per planned were jettisoned about 3 pounds worth in all, including certain bracket, camera mountings, and that sort of thing. Young reported he presently reads about 30 percent fuel remaining onboard. Here is the tape from the CSQ pass.

CSQ Agena acquistion.

S/C Acquistion Gemini.

CSQ Gemini 10 CSQ.

S/C Go ahead CSQ.

CSQ Roger. We got a little information for you. Okay the flight plan for tomorrow will be just about like it is layed out on your plot you have onboard. The exact times for the maneuvers will be up-dated. Give it to you in the morning.

S/C Their still tracking the 8 Agena and they plan to have all the right information.

CSQ About an hour to 2 hours after you get up in the morning, somewhere along in there they plan to run an ECS test, prior to you going to EVA to make sure that everything is like it should be.

CSQ Go Flight.

M/C Want to be sure that he understands the tests in connection with the problem we had today. We just want to do a verification of it.

CSQ Say again.

M/C I want to be sure that he understands the tests with the connection of the problem we had today.

CSQ Tell him that it is.

M/C Yes. Tell him that we want to do an ECS test to verify where we stand with respect to the kind of irritation problem we had today.

CSQ Roger understand.

CSQ 10 this is CSQ. This ECS test for tomorrow is to find out where we stand in respect with this problem of irritation today.

S/C Understand, Roger.

CSQ And also we'd like a little information on the weight, so we can keep up the ground computations. Like to know if you retrieved the S-12.

S/C Negative S-12 retrieval.

CSQ What about the cover on the command pilots window?

S/C Negative. Didn't have time to do it yet.

CSQ Okay. You got any estimates on the number of pounds that might have been jettisoned during the EVA?

S/C Yes, let's see. There was one waste bag, the S-13 bracket. The MSC plate, and the MSC

S/C telescoping rod, all together I'd guess about 3 pounds.

CSQ Roger.

CSQ Okay. We'd like an onboard propellant quantity read out please.

S/C Around 30 percent.

CSQ Roger.

CSQ Have you got anything you'd like to give us in the way of a flight plan report?

S/C I don't know I think we did everything we could during the day.

CSQ Roger, understand.

CSQ What kind of food and water report do you have for us?

S/C Our water count is 5 64 and we're eating the third meal of the day right now.

CSQ Roger.

M/C CSQ, Flight.

CSQ Go Flight.

M/C On S-12 if he has not locked the door, don't open it for the night.

CSQ] Do not open the collector door.

M/C Stand by.

S/C That was a good idea about D-5, we'll have a little more attitude control gas for the Agena I think we could have gone through another sequence without any trouble, if the photometer up here was working properly.

CSQ Roger, it sure was using up the gas.

S/C Yes. I know.
On EVA I think I mentioned most of the things as I went along except coming back in, and the hatch and all the related equipment involved in getting back in all worked very well.
The thrusters are very low and everything works very smoothly.

CSQ Very good.

M/C CSQ, Flight.

CSQ Go Flight.

M/C We're ready to lock the door on the S-12.

CSQ You're ready.

M/C And they want leave it open.
They said they got an up-date and they are ready to lock it.

CSQ Say again.

M/C ... says he's got an up-date and he's ready to lock the door.

CSQ Okay we'll tell him to lock the door.

CSQ 10, CSQ.

S/C Go ahead.

CSQ Okay you can lock the door on the S-12 now.

S/C Door on the S-12 is locked.

CSQ And I'm fixing to transmit your TS.

S/C Roger on TS. Like to have the S-12 door open when we get up this morning.

M/C CSQ, Flight.

CSQ Go Flight.

M/C The only other thing we have for them Gary is we have a timing to reset over Hawaii, and the Agena/so will need the encoder off, and that's all we have for the rest of the night.

CSQ Roger. We're showing the tank rate down to 720, we're going to have it boosted up to about 700 onboard.

M/C Go ahead.

CSQ 10, CSQ.

S/C 10 go ahead.

CSQ Okay we're showing your tank pressure to be down a little bit why don't you boost it up to about 700 onboard.

S/C Okay.

CSQ And we're going to have a reset timer reset over Hawaii on this pass, so we'll need your encoder off during Hawaii pass.

S/C All right.

CSQ /10, CSQ we have 1 minute to LOS, standing by.

S/C How is your weather down there?

CSQ Real nice today.
Seas are calm.

S/C Say again.

CSQ Said the seas are real calm today.

S/C That's good.

END OF TAPE

This is Gemini Control Houston, 29 hours and 29 minutes into the flight of Gemini 10. Over Hawaii they had brief conversation between Ed Fendell and the crew , we thought we could detect the crew polishing off their evening meal. This probably will be the last conversation with the crew tonight, the flight plans shows them turning in for the evening at 29-40 elapsed time beginning a nine hour sleep period. Here is the conversation from Hawaii:

HOU Roger, Hawaii

Haw AGENA tm solid. Flight, Hawaii

HOU Go ahead

HAW We show SPC enable we are going to send SPC disable.

HOU Roger, go ahead

HAW 10, Hawaii

S/c 10, go ahead

HAW How are you doing ?

S/C Feel fine

HAW Getting all squared away to go to bed

S/C Rog, we got encoder off for your pleasure.

HAW OK, we are going to send a couple of commands and then work in we are going to send you a TX now and then get you squared away here

S/C OK, get any TX

HAW Ok, I got a couple of questions for MIke.

S/C Speak

HAW Did he happen to notice whether the boom for MSC-3 was extended when he was standing up outside.

S/c Negative, I did not notice

HAW Did you happen to notice whether the MSC-6 door was open ?

S/C Negative, I did'nt notice that either, I had just a couple of minutes of sunlight before I came back in and I was looking at the MSC 6, excuse me, MSC -8 equipment exclusively.

HAW Oh, OK. OK we're done commanding, you can turn your encoder back on. OK they have got a real good hack on the Gemini 8 orbit and they should'nt have any trouble getting you up there tomorrow.

S/C That sounds good. Where they going to drop us off ?

HAW Well, we are going to see about that tomorrow what time.

S/C OK

HAW Tomorrow's day should be pretty close to the nominal flight plan

S/C Yes, that is what we heard.

HAW Ok, flight he looks pretty well squared away , powered down and it looks like ready to go to bed.

HOU Hawaii, from Flight

HAW Flight, Hawaii

HOU We need an Agena LOS main and look at what you're reading on your ATS.

HAW OK

HOU And pump configuration B pumps

HAW I cant read your last part

HOU And pump confivuration

HAW And pump configuration B pumps and both loops. OK, flight on the ACS gas pressure its six eight two k psi a.

HOU Six eight Q, Rog. Temperature ?

HAW Six nineer decimal four.

HOU Rog, warm 'n up.

HAW Looks like he's got 35 pounds

HAW lo, Hawaii

HAW We'll be shutting you down now, you're looking real good all your systems are squared away and we will be running quiet here for the rest of the evening.

S/C Roger, thank you very much.

HIOU Hawaii from Flight

HAW Go ahead flight.

HOU To keep the currents where we want them suggest he put the TM system switch in the real time and ack gage and just leave it there for the evening .

HAW OK, 10 from Hawaii, you need not acknowledge would you put your TM control switch to the real time and ack gage position and leave it there while you sleep.

HAW Flight, Hawaii

HOU GO ahead Hawaii

HAW Make that 32 pounds of ACS gas remaining.

HOU Rog

END OF TAPE

This is Gemini Control at 30 hours 29 minutes and 37 seconds after liftoff. Gemini 9...Gemini 10 is midway through the 19th revolution, approximately over the Indian Ocean. During the pass, at the beginning of this revolution, over the tracking ship Rose Knot, Flight Director Glynn Lunney, at the suggestion of the spacecraft systems engineer, John Aaron, requested that the spacecraft communicator on the Rose Knot wake up the crew -- "Sorry about that", he said -- to turn on the primary A pump in the coolant system. It seems that the temperatures were a little below the normal scale in the coolant regulators, and then they were told to go back to sleep. Other than that, the spacecraft and the Agena were go on the ground at the Rose Knot. The orbital elements of Gemini 10 now stand at 210 nautical miles at apogee by 208 nautical miles perigee. At 30 hours 30 minutes and 45 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 32 hours, 29 minutes, 38 seconds after liftoff. Gemini 10 at the present time is over central Pacific and will be acquired by the Hawaii tracking station within in about five minutes. It it is two thirds of the way through the 20th revolution, earlier in this revolution they were given a GO over the tracking ship ROSE KNOT when they read out the onboard telemetry, the crew of course is still asleep and will be for the next six hours, also there was a silent pass over the Coastal Sentry tracking ship and they were given a GO from that station. The spacecraft communicator coastal sentry commented that the seas were very calm at the position where the coastal sentry is hoved to between Japan and the Phillippine Islands, this is in contrast to some of the earlier missions when the weather has been rather rough. Toward the end of the 19th revolution over the Hawaii pass, a tape dump of telemetry data was conducted. At 32 hours, 30 minutes and 54 seconds after liftoff, this is Geminin Control.

END OF TAPE

This is Gemini Control at 33 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 presently is over the African continent just at the beginning of the 21st revolution. During the pass at the very start of this revolution over the tracking ship Rose Knot, a silent pass, both vehicles were judged go on the ground by the spacecraft communicator aboard the Rose Knot. Toward the end of the 20th revolution during a similar silent pass over the Hawaii tracking station, the spacecraft communicator, Ed Fendell, at the Hawaii station said that both pilots appeared to be resting well. Heart rates on the command pilot were running 65 to 70; whereas the pilot heart rate had dropped down to between 40 and 45. At 33 hours, 30 minutes, and 35 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 34 hours, 29 minutes and 37 seconds after liftoff. Gemini 10 is presently over the South Centeral Pacific on the..at the end of the 21 revolution. That pass just completed over the tracking ship Coastal Sentry, which was another so-called silient pass in which the crew was not contacted and telemetry readouts were made at the tracking ship. The spacecraft was "GO" as it went over the hill, as they say, from the Coastal Sentry. Here in Mission Control, we are pretty well settled down for the quiet hours and the sleep watch. We get into the backside of the orbit, where we have only four consecutive passes or so where the spacecraft will have the two ships, each revolution with no land stations. Consequently it is rather far apart between contacts with the spacecraft. The orbital elements of Gemini 10 still stand at apogee of 210 nautical miles, perigee of 208 nautical miles. At 34 hours, 30 minutes and 56 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 35 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 at the present time is over Central China midway through the 22nd revolution, and within three minutes should be acquired by the tracking ship Coastal Sentry for another so-called silent pass in which the telemetry is analyzed on the ground, but the crew is still asleep and will remain asleep for approximately three and a half hours. Earlier in this revolution over the tracking ship Rose Knot hove to off the coast of South America, a telemetry data tape dump was performed and all systems looked good from the Rose Knot. At 35 hours, 30 minutes and 25 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control 36 hours 29 minutes and 38 seconds after liftoff Gemini 10 has just begun its 23rd revolution and is presently over the tracking ship Rose Knot off the coast of South America. During this pass and the previous pass over the coastal sentry tracking ship both crewmen appeared to be asleep and both the vehicles, that is the Gemini and Gemini 10-Agena were go on the ground. A summary of world news and ball scores is going out to the tracking stations over teletype and several editions is what is called the Orange Bugle, named after the Orange team of flight controllers during the sleep watch in Mission Control. Flight Controllers at the tracking stations sometimes feel rather isolated from whats happening at home and they are hungry for a little news. Some of the flight controllers here at Mission Control are listening to Tijuana Brass on one of the inactive communication loop between the passes over the tracking stations when they are not otherwise engaged. At 36 hours 30 minutes and 50 seconds after liftoff , this is Gemini Control.....

END OF TAPE

This is Gemini Control 37 hours 29 minutes and 38 seconds after lift-off. Gemini 10 at the present time is nearing the end of the 23 revolution and is north of New Zealand in the south central Pacific. The crew apparently is still asleep according to the ground readouts aboard the Coastal Sentry during the pass a few moments ago in this revolution. Things are rather quiet here in mission control, we have perhaps two station passes each revolution, and there's a lot of waiting between each pass. At 37 hours 30 minutes and 15 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control, 38 hours 29 minutes and 38 seconds after liftoff. Gemini 10 is presently over the Arabian Peninsula, 1/4th of the way through the 24th revolution. During the pass just a few minutes ago over the Canary Island tracking station the spacecraft communicator at Canary reported that both spacecraft were go on the ground. Meanwhile here in Mission Control a flight plan for the coming day has been generated by the orange team and I will go down through this flight plan it's quite lengthy. All times will be given in ground elapsed time after liftoff. Approximately a half hour from now at 39 hours elapsed time the crew of Gemini 10 will end its sleep period. For the next hour until 40 hours ground elapsed time will be an eat period scheduled. At 39 hours 40 minutes Mission Control here will give them the flight plan update and a fuel cell purge of both cells one and two, will be conducted. Following that over the Canary Island they will power up the platform and give the Canary Island spacecraft communicator a crew status report and they will receive /planned landing area updates for the next several /planned landing areas. Going on down at 41 hours 3 minutes and 49 seconds there is a plane change maneuver using the Agena secondary propulsion system. They will burn toward the north at 15.1 feet per second. At 41 hours 13 minutes a Mission Control Center here will give them a GO, NO GO for landing area 44-1. At 41 hours 35 minutes 51 seconds after liftoff there will be a phase adjust maneuver. The secondary propulsion system will be fired in retrograde for 4.1 feet per second. At 42 hours 21 minutes

and 53 seconds the height adjust maneuver using the Agena secondary propulsion system will be made at .9 feet per second posigrade. Immediately after maneuver they - this maneuver they will go to - they will power down the platform and perform a test of the environmental control system. This test is scheduled to be completed at 43 hours 25 minutes. Then they will begin the preliminary preparation for the umbilical extravehicular activity. From 45 hours 15 minutes to 46 hours there is scheduled an eat period. At 46 hours 12 minutes 27 seconds there is a co-elliptical maneuver using the Agena secondary propulsion system and it will be a 6 foot per second burn. Immediately after this co-elliptical maneuver a run of the S-26 Ion Wake Measurement experiment will be made. First th y will start the Agena recorder, then undock, separate to 5 feet and stabilize for 30 seconds while minimizing the firing of the Gemini Oams thrusters. Then they will maneuver downward 15 feet from the axis of the target docking adapter at approximately 2 feet per second maintaining a 5 foot separation. The holding separation distance maneuver upwards to the - as you were let's run that by again - holding separation distance of the maneuver upwards to TDA axis at 2 - .2 feet per second. Translate aft along the TDA axis at .2 feet per second to a 50 foot separation and at 20 feet separation they will turn the radar on. At 50 foot they will increase the separation to 2 feet per second. At 200 feet the Agena recorder will be commanded off it will maneuver small end forward to acquire the Gemini 8 Agena.

At 46 hours and 45 minutes they - for 15 minutes they will align the platform. After the - they will have a - over Carnarvon at 46 hours 58 minutes they will get an update for the dual rendezvous and also run a purge of both fuel cells. At 47 hours 24 minutes 3 seconds the terminal phase initiation for the dual rendezvous will be made. At 48 hours they will do the final umbilical extravehicular activity preparation, approximately at sunset. At 48 hours 36 minutes at sunrise, spacecraft sunrise, they will start the umbilical extravehicular activity. At 51 hours 38 minutes 51 seconds they will conduct the heighth adjust maneuver which apparently is 100 feet per second retrograde immediately followed by a run of the D-10 Ion Sensing Attitude Control experiment. At 51 hours 40 minutes through 52 hours 30 minutes another eat period is scheduled. At 52 hours over Carnarvon they will get a flight plan update, purge fuel cells, and get a cryogenic quantity readout. That is as far as the flight plan update runs just now. There will probably be another installment later on today. Meanwhile let's have a look at the weather here. Weather conditions are mainly satisfactory in the primary recovery zones for Gemini 10. Eastern Atlantic zones, partly cloudy skies, northeast winds 15 to 18 knots, seas 4 to 6 feet. Western Atlantic which is the primary landing zone, mostly cloudy with considerable shower activity in the northern portion, wind direction will vary with speeds generally 18 to 25 knots and wave heights 5 to 8 feet. Mid-Pacific landing zone, partly cloudy, easterly winds 12 to 15 knots, 4 to 5 foot waves. Western Pacific landing zone,

partly cloudy, few showers, variable winds near 10 knots and 4 foot waves. Meteorological features which will be overflown during the day include frontal cloud systems in the southern hemisphere, now in the winter season. Cloud formations organized along the inter-tropical convergence zone. At 38 hours 37 minutes and 38 seconds this is Gemini Control.

END OF TAPE

This is Gemini Control, 39 hours, seven minutes into the flight and the crew has awakened, ready for another day's work. Spacecraft 10 is out over the south Pacific over its 24th revolution and just a little bit east of Australia. There was a very brief conversation as the Gemini 10 skirted the CSQ, little more than a good morning. The Flight Controllers on the CSQ reported that both the spacecraft and the Agena looked very good from the ground. Gemini 10 is in an orbital pass that sweeps way down in the Southern Hemisphere at the present time. The next station to acquire will be Antigua at 39 hours, 39 minutes elapsed time. We'll play this tape from the CSQ for you now.

CSQ Gemini 10, CSQ Cap Com. Gemini 10, CSQ Cap Com.

S/C CSQ, this is Gemini 10.

CSQ Roger, good morning.

S/C Good morning.

CSQ We'd like you to place your adapter C-Band to continuous.

S/C Okay, that's done.

CSQ Roger, everything is looking real good here on the ground. The U. S. will have you here in about 45 minutes and they'll have the flight plan update for you when you get there.

S/C Okay, fine.

CSQ Flight, CSQ.

HOU Go ahead.

CSQ Okay, everything is looking real good here. Our TM is just now starting to break up. We had a pretty solid pass.

HOU Roger. You must have gotten a good buffer then.

CSQ Say again.

HOU You must have gotten a good telemetry buffer then.

CSQ Roger. We should have a real good summary.

HOU Okay. Okay, Gary. This is your last pass. We'll be talking to you tomorrow.

CSQ Roger, we'll be looking for you.

HOU Okay, after we get all your data and your post pass we'll send your release message.

CSQ Roger.

HOU Get a good night's sleep.

CSQ Okay, thank you.

HOU Okay.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/20/66, 8:20 AM TAPE 134 PAGE 1

This is Gemini Control at 39 hours 59 minutes into the flight. Gemini 10 is over Africa, just about to pass out of range of Canary Island station. The spacecraft communicator here in the Control Center, C. C. Williams, asked John Young at the start of the Antigua pass how their eyes felt. John replied everything was fine this morning. C. C. then began passing up the updated flight plan that was not completed before we lost acquisition at Antigua and the spacecraft communicator at Canary Island station is in the process of completing that now. Mike Collins reported over the Canary Island station that they were eating breakfast at that time and that both he and John Young were go. Gemini 10 docked to its Agena still, is in a 210 by 208 nautical mile orbit. The Agena 8 is in a 216.5 by 215.5 nautical mile orbit. We have the tapes now of the Antigua and Canary Island passes and we will play it for you.

HOU Gemini 10, Houston Cap Com.

Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, good morning John. How are your eyes this morning?

S/C Everything is fine this morning, C. C.

HOU Good, we would like for you to start fuel cell purge starting section 2, then section 1.

GTI Acquisition Grand Turk.

S/C Okay, C. C. Williams.

HOU Roger. John, on these burns we have got today, to save propellant during the Agena burns we would like for you to go to flight control mode 7 30 seconds prior to SPS ready, instead of 3 minutes prior to it as we have been.

S/C Roger. I agree with that.

HOU Okay, and we would also like to use flight control mode 1 for all gyro compassing and you will have to send command 460 after your stabilized on a new heading to put the horizon sensors back in low gain.

S/C Roger, use FC-17460 to get the horizon sensors located.

HOU Roger. I have got a flight plan for you, update if you are ready to copy.

S/C Okay, ready to copy.

HOU Roger. 3951 over Canaries, power up your platform. Give a crew status report and they will give you a PLA update. They would also like cryo quantity readout. They will load the velocity meter for the plane change maneuver. We would like for you to load module 3 gyro compass to TDA forward, spacecraft 01800. When the platform warms up, go to flight control mode 2 and cage to Agena. That is cage BEF. Then to all break and go to flight control mode 6. Then gyro compass Agena TDA north. That is spacecraft 0900 at 4045. Gemini 10, this is Houston Cap Com.

S/C 10, go ahead.

HOU Roger. Correct my last statement there. We don't want you to gyro compass in mode 6. We would like for you to gyro compass in mode 1.

S/C Okay.

HOU Roger and 410349 you have a plane change maneuver on SPS burn 15.1 feet per second north. Immediately after you complete that maneuver, gyro compass TDA aft, spacecraft 000. At 4113 we will give you a Go/no-go for 441. At 4120 go to flight control mode 2 and cage to Agena. Then return to flight control mode 6.

S/C You want me to go to SP 6 or SC 1?

HOU I am sorry SC 1. At 413551 phase adjust maneuver and SPS burn 4.1 feet per second retrograde. Immediately after this phase adjust gyro compass to TDA forward, spacecraft 01800. Do this in two steps, two 90 degree gyro compassing. And you will be in flight control mode 1. Then purge fuel cells sections 1 first, then 2. And perform the initial ECS test preparations which we will pass up to you later, John, on the ECS test we are going to run today.

S/C Okay.

HOU At 42:21:53, you have a height adjust maneuver, an SPS burn of 9/10ths feet per second posigrade.

HOU Immediately after this burn, go to flight control mode 1 and power down the platform. And at this time, we will run this ECS test. At 43:25 the ECS test should be complete and you can start your preliminary EVA preparation. At 45:00 power up platform. From 45:15 to 46:00, you can eat and install the 18mm lens on the movie camera, 1 frame per second. At 46:00 gyro compass to TDA forward, spacecraft 01800, and cage to Agena. That is cage BEF. At 46:12:27, we have got an N_{SR} burn, it will be an SPS burn of 6.0 feet per second. Now when you have completed this N_{SR} burn, we would like to run S-26 at a modified mode A as follows: Start the Agena recorder, that is command 041, undock, record the time, separate to 5 feet from the Agena and stablize for 30 seconds. Minimum thurster firing. Then maneuver down 15 that is 15 feet from the TDA axis at approximately 2/10ths feet per second maintaining 5 feet separation. Holding this 5 feet separation distance, maneuver upwards to the TDA axis at 2/10ths feet per second. The translate aft along the TDA axis at 2/10ths feet per second, to 50 feet, turn the radar on at 20 feet. When you reach 50 feet increase the separation rate from 2/10ths feet per second to 2 feet per second. When

HOU you reach 200 feet, that is two zero zero, turn the Agena recorder off, maneuver to SEF and pick up the 8 Agena. That is about all the time I have John. Have you got all that?

S/C C. C., you are fading out. I can't read you.

HOU Roger, where did you miss out on it and we will try to pick you up over Canaries.

S/C You are fading out C. C.

HOU Roger. Canaries will pick you up and give you the rest of this flight plan, John.

ANT Antigua LOS.

S/C Roger, gun counter is 639. We are eating our breakfast now. We are both go.

CYI Okay, we have some information for you to copy now. PLA update and your plane change update.

S/C Okay, stand by one.

CYI Okay, could you move your quantity read switch in the 02 position for us please?

S/C Roger, ready to copy.

CYI Okay, which one do you want first? The plane change or the PLA?

S/C Plane change, of course.

CYI Roger. Okay, purpose is plane change GETB is 41:04:26 delta T 17 seconds. That is the actual length of burn. Core 27 is 00148, thrusters SPS unit 2. Maneuvet TDA north. Did you copy that?

S/C Roger, we got it.

CYI Okay, I have got your PLA update here.

S/C Ready to copy.

CYI Okay, move your cryo quantity switch to H2 position for us, please.

S/C Okay, that is done. Ready to copy PLA.

CYI Okay, very good. 27-1 423032, 20 plus 17, 25 plus 21. Weather is good and you need a SEP maneuver.

END OF TAPE

CYI Area 28-1, 44 08 10, 20 + 27, 25 + 50, weather is marginal. Set maneuver required.

Area 29-1, 45 45 43, 20 + 36, 26 + 09, weather is marginal and a set maneuver is required.

Area 30-1, 47 23 43, 20 + 42, 26 + 19, weather is good. Set maneuver required.

Area 31-4, 50 18 13, 21 + 42, 27 + 24, weather is good. Set maneuver required.

Area 32-4, 51 56 17, 21 + 44, 27 + 37, weather is good. Set maneuver required.

Area 33-3, 53 13 13, 25 + 00, 30 + 01, weather is good. No set maneuver.

Area 34-3, 54 51 19, 23 + 30, 28 + 33, weather is good. No set maneuver.

Bank angle for all areas is roll left 90, roll right 90. The set maneuver is 100 foot per second, 20 minutes prior to retrofire. Retro pitch angle is 20 degrees. We recommend that the catch-up mode be used for your OAMS burn. Over.

CYI Roger we got those, thank you.

OK you can turn your cryo quantity switch off now.

Ok you can turn you encoder back on we got a good VM word in there.

CYI Encoders on, cryo quantity off.

Ok, where did you loose Houston Cap Com on your flight plan update. I can finish it off for them.

S/C You better start with S-26.

CYI Ok, S-26 that was at time 46:12:27. Start Agena recorder, that is command 041. Undock, record time, separate to 5 feet and stabilize for 30 seconds. Minimize thruster firing. Maneuver downward for 15 feet from TDA axis at approximately .2 feet per second, maintaining 5 foot separation. Holding set distance maneuver upwards to TDA axis at .2 feet per second. Translate aft along TDA axis at .2 feet per second to 50 feet separation. Radar on at 20 feet. At 50 feet increase separate to 2.0 feet per second. At 200 feet Agena recorder off. Maneuver SEF to acquire Agena 8. OK, at 46:45 align platform for 15 minutes. At 46:58, at Carnarvon, you will have an orbit rate compensation vector update, a dual rendezvous update, purge the fuel cells section two then section one. At 47 +24 + 03, dual rendezvous TPI. At 48:00 final umbilical EVA prep, sunset. At 48 + 36, sunrise. Start umbilical EVA. At 51:38:51, heighth adjustment maneuver, 100 feet per second retrograde immediately followed by D-10 Mode "A". Control spacecraft to zero, zero, zero. Attitude control platform SEF. At 51:40 to 52:30 eat period. At 52 hours at Carnarvon you will get a flight plan update, purge the fuel cells section one then two at cryo quantity readout. That completes the flight plan update.

CYI Did you copy.

S/C Roger, we copied.

HOU Canary Cap Com, Houston Flight.

CYI Go, Flight.

HOU OK, you got a good VM word. Did you get the Agena properly configured?

CYI That is affirmative.

HOU OK. Well done.

CYI Gemini 10, we'll see you the next time around.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com. Standing by.

END OF TAPE

This is Gemini Control, 40 hours, 29 minutes into the flight and we're just getting ready to acquire Gemini 10 at the Carnarvon station. We're standing by now waiting for the Carnarvon Cap Communicator to put in a call to the spacecraft. We're just about at the edge of the range of that station. This next burn scheduled now for 41 hours - here's the Carnarvon pass.

CRO I've got a nodal update for you.

S/C All right, go.

CRO 9 39 39, rev 25, 71.3 west, right Ascension, 05 hours, 06 minutes.

S/C Roger.

CRO Okay, do us a favor would you? Let Mike set up 460, I mean, 340 for us. We want to interrogate that velocity meter and get a readout.

S/C Understand set up 370?

CRO Negative, 340.

S/C Roger, 340. 340, may I proceed?

CRO Roger.

CRO Okay, 10. This is Carnarvon. We checked the velocity meter and all systems are go for your SPS burn.

S/C Roger.

CRO Okay, I have a little trouble shooting procedure for you on that 16 mm camera, if you want to listen to it.

S/C Yeh, go ahead.

CRO Okay, it says here, "General Directions for the trouble shooting of the camera." Set up the camera and try all

camera speeds. Change magazine and try all camera speeds again. It says it might be possible for the camera to work in 16 frames per second mode only.

S/C I've already tried that and it doesn't seem to do any good. Furthermore, it might help them to know that in the test position the camera should work only when the button is held down, but this one will now work when the button is released also and in test position.

CRO Okay, I copy that.

(PAUSE)

This is Gemini Control. We're still standing by awaiting more conversation. Gemini 10 is still within range of the Carnarvon Station.

(PAUSE)

This is Gemini Control. Still no additional conversation between Gemini 10 and Carnarvon. The spacecraft is on the verge of losing contact with that station but we are still within range so we will stand by until we have Loss of Signal at Carnarvon.

(PAUSE)

This is Gemini Control, 40 hours, 37 minutes into the flight. This plane change maneuver has been updated somewhat. Time now for the plane change is 41 hours, four minutes, 26 seconds elapsed. The duration of the burn will be 17 seconds. It will be a secondary propulsion system burn of the Agena. We're looking for 14.8 feet per second. Gemini 10 is out of range of Carnarvon now, still over Australia. We will not acquire another station until 41 hours,

15 minutes elapsed time when we come up in range of Grand Turk.

This is Gemini Control.

END OF TAPE

This is Gemini Control at 40 hours 59 minutes into the flight. Gemini 10 down over the middle of the South Pacific, far out of range of any of the tracking stations. This plane change maneuver will occur before we acquire the next tracking station, about 10 to 12 minutes before we acquire. We hope to get the crews evaulation of the burn at the time that we do acquire at Grand Turk. This will be a very small change. It will be changing the plane to the north but at a value of 14.8 feet per second. It will be a very - almost negligable effect on the ground track of the spacecraft. This is Gemini Control.

END OF TAPE

This is Gemini Control at 41 hours 28 minutes into the flight. We have a GO for the 44-1 planned landing area. We didn't get that passed up to the crew during the Grand Turk, Antigua pass but we will pass it up over the Canary Islands in a few minutes. There was considerable conversation at Grand Turk. The plane change burn went fine according to the crew. We updated the phase adjust burn, that is coming up at 41:35 minutes elapse time. We explained the environmental control system test that we are planning. Here is the tape of that pass now.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, over.

HOU Roger, Gemini 10. Houston Cap Com requesting coder off for a TM dump.

S/C Going off.

HOU Roger, how was your last burn, John?

S/C Oh, it was ok.

HOU Ok. I've got a maneuver update for you, are you ready to copy?

S/C Roger, ready to copy.

HOU Roger. The purpose is phase adjust. GETB 41:35:50, Delta V 3.5 feet per second, delta T 5 seconds. address 25 90 03 5, thrusters SPS, TDA aft, retrograde maneuver.

S/C Roger.

HOU I've got this ECS test that we would like to run, if your ready to copy what we want to do on

HOU that John.

S/C Roger.

HOU OK. The preliminary preparations will take place after the phase adjust maneuver and the fuel cell purge. The preliminary preparations will be to close up both suits and perform a suit integrity check for both pilots. The ECS test will occur after the heighth adjust maneuver if there is one and after you've powered down the spacecraft. The configuration for the test will be both suit flow control valves full open. Recirc valve closed. Both face plates closed. Suit fan number 1. What we want you to do is decompress the cabin to 3.0 to 3.4 psi. Then just continue in this configuration for one hour and then repressurize the cabin. Repressurization should be around 43 plus 25 into the mission. If you get any eye irritation or odor during this test, initiate O_2 high rate. If the problem doesn't clear then within 15 minutes repressurize the cabin. That's all the test John. It's just to check to make sure that we've got no problem using just a single suit fan before we think about this EVA. OK.

S/C Roger.

HOU John, can you give me the residuals from your last burn if you have them?

S/C Roger. We're looking for them now.

HOU OK. While your looking we'd like for you to check each others eyes to see if you've got any redness or swelling. I'd like to know if you've got any relief from the eye drops if you used them.

S/C We haven't use.....as far as redness and swelling goes, there is a very very slight amount of swelling and negligable redness. We do still occasionally get a whiff of this stuff.

HOU Roger. We'd like for you to save any of the wipes that you used on your face. Any of those wet wipes and also the defogging wipes from - for the face plates of your suits there, and any chewing gum that you may use during the flight. We'd like for you to bring that back so we can check to make sure it is lithium hydroxide.

S/C Ok. The wet wipes that we originally used we've already throwed away during the first cabin depress. But, we'll save all the subsequent wet wipes. We are saving the towels we wiped our eyes with but we haven't used any chewing gum.

HOU OK. Real fine.
On this camera, Mike it looks like you've had a micro switch failure there. There is nothing we

can do about it.

S/C What micro switch are you talking about, C.C.?

HOU It's a micro switch in the camera Mike.

S/C Roger, understand. Thank you.

HOU What is your suit fan configuration at this time?

S/C Suit fan number 1.

HOU Roger.

HOU Gemini 10, Houston Cap Com. We've got a VM compare. Looks like a good load.

S/C Very good.

HOU Notice you've got your encoder back on.

HOU This is Houston Cap Com standing by for the residuals on your last burn if you find them.

S/C Roger C.C. We're.....

HOU Gemini 10 from Houston Cap Com. For your information the Astros beat the Phillies 8 to 2 in the Dome last night and Frank and Mia got married in Las Vegas.

S/C Well thats one triumph at least. Here are the residuals on that burn.

HOU We're ready to copy.

S/C 80 was 00 10 and 81 and 82 you can't put to much faith in because I didn't cage to the Agena but it was 00 00 5 and minus 00 00 3.

HOU Roger. What was 80 again?

S/C Three zeroes one zero. (000 01)

HOU Roger.

S/C Foot per second left over.

In other words we got it .....

The IVI's we had an extra foot. It went from aft to forward to plus one.

HOU Roger John.

HOU Gemini 10, Houston Cap Com. I'd like to confirm that you're TDA aft now.

S/C Roger. We're TDA aft now.

HOU Roger.

HOU Gemini 10 from Houston. We've got about one minute to LOS, standing by.

END OF TAPE

This is Gemini Mission Control at 41 hours 37 minutes into the flight. And we have a hurricane advisory from the Miami bureau station. Reports from ships and NASA research aircraft indicate that the remnants of former tropical storm Celia, which was showing indications yesterday of regeneration, intensified rapidly during the night and reached hurricane intensity this morning, at 11 AM Eastern Standard Time. The center of hurricane Celia was located at latitude 32.6 degrees north longitude 69 degrees west. This position is about 240 miles west of Bermuda. The hurricane is moving toward the northeast at about 23 miles per hour. Highest winds are 80 miles per hour in squalls southeast of the center. Gales extend out 75 miles in all directions, except 150 miles in the southeast quadrant. Lowest pressure is 99 milibars or 29.44 inches. Hurricane Celia will continue moving toward the northeast with some acceleration, but with no or only slight intensification. Hurricane Celia will not affect the coast line of the United States. Bermuda will experience showery weather and a light to moderate squalls during the next few hours and the next advisory will be issued from the Miami weather bureau at 5 PM Eastern Standard Time. The prime recovery area for this Gemini mission will not be affected by this hurricane. We - Gemini 10 is now within range of the Kano, Nigeria station, just passed out of range of the Canary Island Station. We did pass up the go for the 44-1 recovery area and received a go from the spacecraft. We have the tape of the Canary Island station and we will play that for you now and follow it with the Kano conversation.

END OF TAPE

S/C Okay, go.

CYI Roger.....

S/C It is GO.

CYI Roger,.....

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU You seeing much structure activity on the Agena? Go ahead.

CYI Okay. You want them in flight control mode 6 about 30 seconds prior to the ....

HOU That's 7, 30 seconds prior to the burn.

CYI Oh, roger.

HOU Canary, from Houston Flight.

CYI Go, Flight.

HOU You may not see him go to 7.

CYI Say Again.

HOU You may not see him go to FC 7. He's going to go 30 seconds prior to the burn.

CYI We'll be watching.

HOU Okay, but I think the burn will occur over - about - maybe just about your LOS.

CYI About three minutes prior to our LOS.

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU If you see the burn, send us an OBC Gemini at the end of the burn.

CYI Okay, we've got one coming at you now, and we'll get you one right after.

HOU Roger.

CYI Gemini 10, Canary Cap Com, you are GO for your SPS burn.

S/C Roger.

CYI Okay, we've got SPS ready, attitudesare holding good.

S/C Start of burn. End of burn.

CYI Send us an Agena main.

S/C Roger.

S/C Canary, this is 10. 80 is 3007, 80 is 4007, 81 is 4001, 82 is minus 3001.

CYI Roger, copy.

S/C I think it is still overshooting a little. That was 7/10ths over...and I guess we probably shut it down.

CYI Rog. Did you copy those residuals, Flight?

HOU Copy.

CYI We did not see a VM cutoff here on the ground.

HOU Okay.

CYI Okay, Flight. Canary....

CYI Gemini 10, Canary just about at LOS. We'll see you on the next pass.

S/C 10, Roger.

HOU Canary, Flight.

CYI Go, Flight.

HOU Could I have two main Gemini?

CYI Roger.

Kano go remote.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger, we're in flight control mode 1 and we're gyro compassing due north to a TDA forward.

HOU Roger. You've got a fuel cell purge and then a power down.

S/C Right.

HOU Gemini 10, Houston Cap Com. Negative on that power down. That's not until 42:21:53.

S/C .....a height adjust.....

HOU We're looking at it right now. We'll try to get it to you before LOS.

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. No height adjust maneuver required.

S/C Roger. Fuel cell purge in. Should I power down now then?

HOU Stand by. We're talking about it.

Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger. E Com would like for you to stay powered up for the time being. You can start your ECS test at this time, if you'd like.

S/C Oh, roger.

END OF TAPE

This is Gemini Control 42 hours 14 minutes into the flight and Gemini 10 is over the middle of Australia. There was very little conversation in this Carnarvon pass. The crew was instructed to power down the platform and they did start the environmental control system pass - test along toward the end of the pass. We also got a tape dump from telemetry over Carnarvon. The Cap Com there didn't engage with too much conversation because they were preparing for the ECS test. We have a tape of the Carnarvon pass. Let's play that for you now.

AFD Carnarvon Cap Com, AFD.

CRO Go ahead, AFD.

AFD Okay, on the Agena, we would like a VM interrogate and a tape dump.

CRO Roger.

AFD And Flight will be coming to you on the Gemini shortly.

CRO Carnarvon has telemetry solid on Gemini and Agena and all systems are go.

HOU Okay, Carnarvon. You can tell them to go ahead and power down the platform.

CRO Roger. Gemini 10, Carnarvon.

S/C 10, go.

CRO Roger, you can start powering down your platform.

S/C Roger, powering down.

CRO Okay, and we want to send a VM interrogate and also

CRO get an Agena tape dump. So if you will turn your encoder off?

S/C Encoder is off.

CRO Thank you.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight, Carnarvon.

HOU Agena main.

CRO Roger, that.

We have gotten a VM interrogate and also looked at it and it is showing all ones. That doesn't look too good and it is verified by TM. I would like to ask the crew if they enabled the velocity for that last burn.

HOU Say again, Carnarvon.

CRO I say, I would like to ask the crew if they enabled the velocity meter for that last burn.

HOU Negative. We can determine that from Canary.

CRO Okay, we are showing the crew probably going through their integrity check.

HOU Say again, Carnarvon.

CRO I say, it looks like the crew is going through the suit integrity check.

HOU Copy.

CRO Can't you read me, Flight?

HOU Got you now, okay. Someone came in on top.

CRO How do you read me now?

HOU Loud and clear.

CRO Okay.

10, Carnarvon. We have got the tape dump, you can turn your recorder back on again.

S/C Okay, roger.

CRO All systems look go on the ground. We are standing by.

S/C Roger, we ready to start our ECS test now.

CRO Roger, that.

HOU Carnarvon, Houston Flight.

CRO Roger, that.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight.

HOU You might ask the crew to keep an eye on their O_2 pressure during this test. Cryo 2 switch O_2. Watch their pressure in case they have to use high rates.

CRO Roger, that it? Pretty steady.

HOU Rog.

CRO 10, Carnarvon.

S/C 10, ready.

CRO Roger, in the event you have to go to a high rate, you might keep an eye on that O_2 tank pressure.

S/C Okay, will do.

CRO Okay, all systems are go on the ground and we are about to lose you.

S/C Roger, I hope not.

CRO We will see you next time.

Carnarvon has telemetry LOS, both vehicles are showing LOS.

END OF TAPE

This is Gemini Control 42 hours 59 minutes into the flight. Gemini 10 is within range of the Bermuda, Grand Turk and Antigua stations. We are in the midst of conversation with the crew now. They are taking pictures. They report they cannot see Hurricane Cecelia but Command Pilot John Young says he thinks he saw it yesterday. Let's start with the tape at the front of this pass and then we'll go through the rest of the pass.

LOS Grand Turk

HOU Gemini 10, Houston Cap Com.

HOU Gemini 10, Houston Cap Com.

S/C This is 10 go ahead.

HOU Roger John. How is your ECS test coming, you still in the suits?

S/C We're at 31 minutes into the test and everything is very nominal.

HOU Roger. You haven't noticed any smarting of your eyes or odors?

S/C No.

HOU Did you wipe your visors with that anti-fogging compound prior to closing up?

S/C No we didn't.

HOU OK.

HOU Gemini 10, Houston Cap Com. Would you turn your encoder off for an Agena tape dump?

S/C Roger. Encoder is off.

HOU Roger

HOU Gemini 10, Houston Cap Com.

S/C This is 10 go ahead.

HOU Roger John. We're looking at the possibility of combining a phasing maneuver with this separation. We'll give you further word on that later. I guess Mike has probably been looking forward to getting that elephant off of him, isn't he?

S/C He sure is.
Yes, it's like driving down the road with a truck and your looking out and like a railroad engineer driving down the road with a big freight train, all you can see is the freight train.

HOU Roger. I'd like to advise you that your friend Celia has redeveloped into a hurricane out in the Atlantic. If you're / separated you may have a chance to look at it on revs 28 and 29. The coordinates are 32.6 north, 70 west.

S/C Roger. I think I got a picture of it yesterday.

HOU Roger. They didn't know it was a hurricane yesterday.

S/C Looked like one to me. It looked like a bunch of big thunderstorms out there.

HOU Roger.

S/C Couldn't see that there was any central vortex development.

HOU You might keep an eye out for it on 28 and 29.

S/C Houston, Gemini 10. When we are coming up on an advantageous position to see Cecelia how about giving us a call?

HOU Roger Mike, we'll do.

S/C OK.

HOU Looks like you should be just about there right now.

S/C Yes that's what I was thinking. We don't see it.

HOU It should be a bit to the north of you yet.

S/C OK.

HOU Mike from Houston. Do you plan to retrieve S-12 and the window cover on your EVA?

S/C S-12 affirmative and the window cover negative. We plan to jettison the window cover so John will have good visibility for the rendezvous and just not attempt to bring it back.

HOU Good head Mike. That sounds like a fine plan.

HOU This is Houston with a minute and 30 seconds about to LOS, we're standing by.

S/C Ok, I'm taking some pictures out to the north about as far as this camera can see the north. I don't really see anything myself. Maybe this Hasselblad can get a little better angle then I can.

HOU Roger.

HOU Gemini 10, Houston Cap Com. You can put your encoder back on.

S/C Roger. Encoder is on.

HOU Roger. We're standing by.

HOU Gemini 10, Houston Cap Com. We've got about 3 more minutes to LOS. We'll be standing by.

S/C OK, C.C.

S/C What do you guys think about this smell we have up here?

HOU We think its lithium hydroxide Mike. This test we're running now is to see if using just one fan won't keep from picking any of it up and bringing it in the suit loop.

S/C I see.

HOU If this test works OK, we'll do the EVA using just suit fan one rather then one and two.

S/C Roger, understand. We can still smell it but it is very mild and we don't have any eye irritation to speak of.

HOU Roger understand.

S/C We got a good nights sleep last night. I imagine better then you guys down there.

HOU I'm glad to hear that.

LOS Grand Turk

Antigua LOS

END OF TAPE

This is Gemini Control, 43 hours, 14 minutes into the flight and Gemini 10 is within range of the Canary Island Station, just at the western part of Africa. There was very little conversation on this pass. The Canary Island Cap Com advised the crew that he had nothing for them and he was standing by. Here is that tape now.

AFD Canary Cap Com, AFD.

CYI AFD, Canary Cap Com.

AFD Roger. We have nothing special for you.

CYI Okay.....

S/C 10, Roger.

END OF TAPE

This is Gemini Control at 43 hours 29 minutes into the flight and Gemini 10 has just passed off the east coast of Africa. Over the Kano, Nigeria station, the - we remoted from there to Houston. Cap Com C. C. Williams updated the flight plans for the crew. We intend now to separate the spacecraft from the Agena at 44 hours 40 minutes elapsed time. This will be a 1.8 feet per second separation, using the forward firing thrusters. And after that time, we are considering a combined maneuver to adjust the coellipicity and the phase. We have the tape of the Kano pass and we will play it for you now.

CYI 10, Canaries. We have got you go on the ground about a minute until LOS.

S/C Roger.

HOU Kano, go remote.

CYI Canaries has LOS. Both systems. Both vehicles are go.

HOU Roger, Canary. Kano, go remote.

KNO Kano, remote.

HOU Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger, how is your ECS test coming, John?

S/C It is coming all right. We have got less than 4 minutes to go.

HOU Roger, if it continues okay, you will have a go for the EVA, but on the EVA, when you apply this anti-fogging compound to the visor, make sure that you wipe it good with a tissue to leave only a

HOU thin film.

S/C Roger.

HOU They suspect that this detergent may be reacting with the lithium hydroxide to cause the odor. So you just want to rub a real thin film on the visor.

S/C Roger. Do you still want the inside man to put that onthis visor. Over.

HOU No, not the inside man. On your deseparation maneuver, John, it looks like about 44 plus 40. We will use a 1.8 posigrade maneuver, using the forward firing thrusters. You will need to bring up your platform in cage to the Agena. And as far as S-26 goes on this separation maneuver, we would like to get the Agena recorder on, prior to undocking. Turn the radar on at 20 feet and try to keep in view of the Agena as long as you can. Or 20 minutes, whichever comes first. And then turn the Agena off before you go SEF and start looking for the 8 Agena.

S/C Roger. Do you want to do this in preference to the [illegible] we discussed earlier?

HOU Roger.

S/C Okay.

HOU And after this separation maneuver, John, we will give you an N_{CC} N_{SR} to really tweak it up. We will advise you more on this SEP maneuver later. But it looks like right now 1.8 at 44 plus 40.

S/C Roger.

HOU Gemini 10, this is Houston. This is all we have for you at this time, John. We have got about 2 minutes until LOS. So, we are standing by.

S/C Roger, and our cabin test is over with. We are repressurizing.

HOU Roger, understand, you cabin ECS tests is complete and you are repressurizing the cabin and everything is go from your end.

S/C Roger.

END OF TAPE

This is Gemini Control, 43 hours, 59 minutes into the flight and Gemini 10 is over the south Pacific, just east of Australia. At the Carnarvon pass just completed the Cap Com at Carnarvon advises the crew that both the Gemini spacecraft and the Agena 10 looked excellent. We still plan to separate the two vehicles at about 44 hours and 40 minutes in the vicinity of the United States. This time may change a small amount and we may update the crew on this time over the Canton station. The S-26 Ion Wake Experiment will be conducted immediately following the spacecraft separation from the Agena 10. This is Gemini Control. We have a tape of that Carnarvon pass. We'll play that for you now.

S/C Roger, Carnarvon.

CRO Gemini 10, Carnarvon.

S/C Go ahead.

CRO Roger, we've got TM. All systems are go here on the ground and we'll be standing by.

HOU Carnarvon from Flight. How are you doing?

CRO All systems are looking excellent.

HOU Roger. Does he have the platform up?

CRO Negative.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU You might remind him to bring his platform up.

CRO 10, this is Carnarvon. Just a reminder. You have a platform power up shortly.

S/C Gemini 10. Roger, we'll remember it.

CRO One minute to LOS, standing by.

Carnarvon has telemetry LOS Agena and Gemini. All systems go at LOS.

HOU Roger, Carnarvon.

END OF TAPE

This is Gemini Control at 44 hours 14 minutes and Gemini 10 is over the Mid-Pacific, just about at the Equator. We've just passed out of range of the Canton Island station and during that pass we did update the crew on this separation maneuver. Time 44 hours 40 minutes 15 seconds and it will be a 1.5 feet per second burn instead of the 1.8 previously passed up to them. This will be a burn with the forward firing thrusters to separate Gemini 10 from its Agena. This is Gemini Control. We have the tape from the Canton Island pass. We'll play that for you now.

Canton go remote.

CTN Roger, Canton remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger, I've got an update for you on the separation and phase adjust burn.

S/C OK go ahead with it.

HOU Roger. The purpose is separation and phase adjust. GETB 44 plus 40 plus 15, delta V 1.5 feet per second, burn time 03 seconds. Yaw - that's a spacecraft yaw is 180, pitch 0. Address 25 00 01 5, 26 and 27 are zeroes. Thrusters will be the forward firing thrusters, posigrade. You should use address 55, all nines, for selecting forward fire thruster logic. Over.

S/C Roger. We got that.

HOU Roger and on that separation, John, are you clear on

the S-26 maneuvers that I gave you over Kano instead of what we gave you in the flight plan this morning.

S/C You just want us to back out at 1.8 right?

HOU That's right. Rig your 18 mm lens in the 16 mm camera at one frame per second, turn the Agena recorder on prior to undocking that's message 041. Undock and then burn on time, turn the recorder on 20 feet out, maintain a radar lock as long as you can or 20 minutes whichever comes first. Then turn the recorder off. That's 030 and 021 prior to going SEF and after the 8 Agena.

Gemini 10 did you get that?

S/C Roger. We understand it.

HOU OK and that burn is 1.5 instead of 1.8. 1.5 burn.

S/C Roger. Understand.

HOU That's all I have for you right now. We'll be standing by we'll pick you up over the states. We've got about four minutes to LOS.

S/C Roger. I just showed the snake to Mike. Sure feels good to stretch your legs out.

HOU Gemini 10, how does it feel to stretch your legs out John.

S/C Boy I didn't know they put so much room in these cockpits. Feels wonderful.

HOU Roger.

CTN Canton has LOS.

END OF TAPE

This is Gemini Control at 44 hours 29 minutes into the flight and Gemini 10 is over the Gulf of Mexico, having just passed over the west coast of Mexico. This separation maneuver will come about the time we lose acquisition at Antigua. We hope to be within range at that time, but we are not sure. There was a brief bit of conversation as we acquired on this state-side pass. We passed up a couple of times for some tweak maneuvers to trim the orbit up a little bit. We have a tape of the - this pass. We will play that for you and then we will stand by for any further transmissions and bring those to you.

GYM Guaymas has acq aid contact.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU Roger. John, we don't have anything for you this pass over the states. You can get ready for your separation maneuver there. After separation, the next thing we will have for you is an N_{CC} maneuver, which will be about over Canton at 45: plus 54 and then an N_{SR} tweak at 46:09 over the states.

S/C Roger.

GYM Both birds looking good, Flight.

HOU Roger, Guaymas.

GYM Flight, Guaymas.

HOU Go ahead.

GYM Okay, we just lost our 1218.

HOU Roger.

GYM Houston Flight, Guaymas.

HOU Go ahead.

GYM We just lost TM-1

HOU What are you doing out there?

GYM We are having a jolly time.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, if you are going to cage to the Agena, John I recommend you go to SC-2 to get out of that dead-band. You are about 4 degrees off now.

S/C Roger. That is where we are going right now.

HOU Roger.

(PAUSE)

This is Gemini Control. We are still standing by. There have been no further transmissions. The flight dynamics officer advises that at the time of the separation burn, the slant range between Gemini 10 and the 8 Agena will be 138 nautical miles, 138 nautical miles. We will continue to stand by and we will bring you any transmissions that we do get before we lose acquisition of the spacecraft. This is Gemini Control.

END OF TAPE

This is Gemini Control. Telemetry indicates that the OAMS are burning. Forward firing, and telemetry shows that he is now free of the Agena 10. That was reported as a three second burn, that separation burn.

(PAUSE)

This is Gemini Control, 44 hours, 42 minutes into the flight. We did not have any voice conversation with the crew during this separation maneuver, however, through telemetry we were able to confirm the OAMS firing, the separation and the fact that Mike Collins changed the flight control mode on the Agena after they were separated. We hopefully will have some voice contact at the Canary Islands within several minutes. This is Gemini Control.

END OF TAPE

This is Gemini Control 44 hours 46 minutes into the flight. We have reacquired Gemini 10 at the Canary Island station. They report that they are now about 400 feet from the Agena 10. We'll play the tape of the first part of this pass and then we'll standby for any further conversation we may have.

CYI Gemini 10 this is Canary Island

S/C Could you turn the L-band on the Agena we just turned it off by mistake. Over.

CYI Roger will do.

HOU Canary, Houston Flight.

Agena India please.

CYI Roger.

HOU Did you get his L-band on?

CYI That's affirmative.

HOU What did he say about the recorder?

CYI It is off.

HOU Off.

S/C Thank you

CYI Roger, we'll be standing by.

S/C We just undocked and we're about 400 feet out now.

CYI Roger, 400 feet.

HOU Canary from Flight.

CYI Go, Flight.

HOU We'd like that Agena recorder on for about 20 minutes or 30. Can you get it on?

CYI Roger.

HOU Go ahead Canary

CYI Our S-band went red just about AOS time.

HOU Understand. Your S-band is red.

CYI Roger.

This is Gemini Control 44 hours 51 minutes into the flight. Just about to pass out of range of the Canary's. We've already acquired at the Kano, Nigeria station. We'll continue to standby through the Kano pass and bring you any transmissions during that time. This is Gemini Control.

CYI Gemini 10, Canary Cap Com. We've got about a minute until LOS, we're standing by.

S/C Roger.

S/C We've lost the Agena in the sunset there.

CYI Canary has had LOS both vehicles. Both GO.

HOU Roger Canary.

Kano go remote.

KNO Kano is remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger. How does it feel to be rid of that freight train you had in front of you?

S/C It was a mighty good train.

HOU It sure was John. You've - do you still have it in sight and radar lock-on.

S/C Still got radar lock on. We're about 1100 feet but we can't see it. The sun is setting right now.

HOU Roger. You're about 20 minutes from the time you got your recorder on so you can turn it off by sending 030 and then 021.

S/C Do you want us to do that now?

HOU You can wait a few more minutes.

HOU Gemini 10, Houston Cap Com. We'd like to know when you jettison your window cover.

S/C I think now would be a good time. Over.

HOU Roger.

S/C This is Gemini 10. I don't think actually this problem has much to do with the window covers. Over.

HOU Roger. We just wanted to know for a weight and balance purpose John.

S/C Roger.

END OF TAPE

S/C It is jettisoned and it looks the same looking out to us.

HOU Roger. How does it compared to yours, Mike?

S/C I don't know, I can just look through one of them.

S/C Right now I've been looking through both sides, looking through his at an angle.....Mine is smudged. It's smudged primarily on the inner surface of the outer pane. It's just a thin film.

HOU Roger.

S/C Do you want to go over those tweak alignments again one more time?

HOU Say again.

S/C Houston, Gemini 10, over.

HOU This is Houston. Go ahead, Gemini 10.

S/C Roger. Want to go over those two alignments, those tweak alignments, tweak burns?

HOU Roger. You've got an NCC at 45 plus 54 and a NSR tweak at 46:09.

S/C Thank you.

HOU And I think you can probably turn that recorder off, 030 and 021 now.

S/C Roger.Took off 1500 feet of film.

HOU Roger. Understand 1500 feet.

For your information, the time you separated from the Agena, your 8 Agena, was 138 miles away from you.

S/C Roger. What's our Delta H?

HOU It's seven miles.

S/C We're right on it.....

HOU We're going to try and sweeten everything up with these two tweak burns, John.

S/C That will be fine.

HOU We're about a minute from LOS. We'll be standing by.

S/C Roger. That sure was a steady....

HOU It sure was. Let's go find the other one now.

S/C Your race.

(PAUSE)

This is Gemini Control at 45 hours, three minutes into the flight. We're out of range of the Kano station now. That Delta H that you heard John Young inquire about is the difference in altitude between the Gemini 10 spacecraft and the 8 Agena, and as you heard C. C. Williams telling that difference is seven nautical miles which is what we've been aiming for. This is Gemini Control, 45 hours, three minutes into the flight.

END OF TAPE

This is Gemini Control 45 hours 14 minutes into the flight. We have just lost acquisition at Tananarive. Gemini 10 down over the Indian Ocean. This N_{CC} maneuver that you heard discussed at - occurred 45 hour 55 minutes 01 seconds before .2 feet per second, this is essentially to trim up the phasing to make the lighting conditions correct during the rendezvous. The N_{SR} tweak maneuver at 46 hours 9 minutes 28 seconds is currently scheduled to be a 9.8 feet per second burn to trim up the coellipticity of the orbit. We have a tape from the Tananarive pass just completed and we will play that for you now.

HOU Tananarive, go remote.

TAN Tananarive remote.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, the data we got right now, John, it looks like we will hit TPI within 3 minutes of nominal. FIDO is still very optimistic about getting there. These tweaks should even sweeten it up better.

S/C Roger. Sounds great.

HOU And we will have an update for you on these tweaks over Carnarvon. Gemini 10, Houston Cap Com. We have nothing further for you at this time, we will be standing by.

S/C Roger.

HOU Carnarvon, Houston Flight.

Carnarvon, Houston Flight.

CRO Houston Flight, Carnarvon.

HOU On the special message we sent you for the code fix maneuver, VZ should be 27 rather than 26.

CRO Roger, I was about to query that.

HOU Okay, you got it.

Gemini 10, Houston Cap Com.

We are about a minute and a half from LOS standing by.

S/C Roger. We are having lunch. Won't you join us?

HOU I would love to.

Carnarvon, Houston Flight.

CRO Go ahead, Flight, Carnarvon.

HOU We would like get an Agena fix on...

CRO Say again.

HOU I would like to get an Agena tape dump over your side.

CRO Roger, that.

You are coming in very weak.

HOU How now?.

CRO Better.

HOU Okay.

CRO Now me.

HOU I got you loud and clear.

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control at 45 hours 29 minutes into the flight. Gemini 10 is over Australia in contact with the Carnarvon station. It is on its 28th revolution. We'll - we're still in contact with Carnarvon and we'll bring this pass to you from the start now.

CRO Carnarvon has telemetry solid, Gemini and Agena.

HOU Roger.

CRO All systems are GO.

HOU Roger Carnarvon.

CRO We faulted our computer.

CRO Gemini 10, Carnarvon

S/C This is 10, go ahead.

CRO Roger, all systems are go here on the ground. I have a couple of updates for you for your CC and NSR.

S/C Ready go ahead.

CRO OK, purpose is corrective combination, GETB 45:54:01, core 25-00 0 11, core 26-90 0 38, 27-00 0 14, maneuver is posigrade up and north. For your co-elliptic maneuver GETB 46:09:28, core 25-00 0 09, core 26-00 0 98, 27 zeroes, posigrade and down.

S/C Roger. 26 on the NSR was 9.8 down,over.

CRO That is affirmative.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU How about the pitch and yaw?

CRO SOP say you don't do that but undock maneuver update.

HOU Give it to him. I think you're wrong.

CRO Roger.

CRO 10, Carnarvon. Do you want the pitch and yaw for that?

S/C That's all right.

CRO He doesn't want them Flight.

HOU Yes, I copied. I'm checking the SOP.

CRO Page 4-9.

HOU Roger.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead.

HOU You win. I'm wrong.

CRO Roger, Flight.

CRO Do we still want this L-band on the Agena?

HOU Say again?

CRO Do you still want the L-band on the Agena?

HOU Standby.

HOU We don't need it, Carnarvon.

CRO OK. 10, Carnarvon. Do you need the L-band for anything?

S/C Negative.

CRO OK, we'll turn it off.

S/C Roger.

CRO L-band commanded off.

CRO Flight, Carnarvon.

HOU Go.

CRO I can't hear you. Say again.

HOU Go ahead

CRO Roger. We're still showing NBO-1 as lost. Do you want us to have him try to press that EKG lead on there?

HOU Copy the NBO-1 is off.

CRO Roger it's lost. Do you think we might be able to get it back if we asked them to press on it - under his arm a little bit?

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Surgeon thinks he might have connected his umbilical electrical which would cause you to loose it.

CRO OK. Our computer is back operational. We're sending you some.

HOU Roger.

CRO We've received Agena tape dump and repositioned the tape recorder.

HOU Roger.

CRO Carnarvon has LOS, TM one and two all systems go at LOS.

HOU Roger Carnarvon.

This is Gemini Control. The reference to that item that was lost in there, that's the signal from the pilot's auxiliary EKG sensor. Since the pilot is in preliminary EVA preparation he very well could have hooked up his umbilical electrical connection to test it out and as you heard the Flight Director that

would cause the loss of this EKG signal. This is Gemini Control 45 hours 34 minutes into the flight.

END OF TAPE

This is Gemini Control, 45 hours, 44 minutes into the flight and Gemini 10 is over the Pacific within range of the Canton Island station. John Young reports that he and Mike Collins have the 8 Agena in sight. We've also determined that it will not be necessary to update these two tweak maneuvers that were given to them awhile ago. Those numbers are still good. We will start the tape on the start of this pass now and then we'll stand by for any further conversation during the pass.

Canton go remote.

CTN Roger, Canton remote.

HOU Gemini 10, Houston Cap Com.

S/C Roger. We have the 8 Agena in sight. We've been watching it for about five minutes.

HOU Roger. Good news! Those updates we gave you for your burns are good. We're satisfied with them. You should get there within 11 seconds of nominal TPI. Gemini 10, Houston Cap Com.

S/C Roger, go.

HOU You seeing it in sunshine, or earth shine or combination?

S/C It's hard to tell. It's one or the other.

HOU What's the sun angle, John?

S/C The sun is just barely north.

HOU Rog.

S/C The sun is about 40 degrees above the horizon and I think we're seeing it mostly in sunshine.

HOU Rog, Mike.

HOU 10, from Cap Com. Can you reference it to a star?

S/C .....It's changing its intensity over a very slow period so I think you have something of a small.....

HOU Roger, understand.

HOU Your range right now, Gemini 10, is 95 miles.

S/C Roger, 95.

S/C It does look like it's pointing toward us.....

(PAUSE)

HAW Hawaii has acq aid contact.

HAW Hawaii has telemetry solid on the Agena.

HOU Roger, Hawaii.

HAW And telemetry solid on the Gemini. Both vehicles are go.

HOU Roger.

HAW Gemini 10, Hawaii Cap Com.

S/C Okay, go.

HAW How are you doing this morning?

S/C Just fine.

HAW Okay, you're looking real good here. We'll stand by and watch your burn.

S/C Roger.

(PAUSE)

HAW We just lost our 1218 at Hawaii.

HOU Roger, Hawaii.

S/C Burn in, Flight.

END OF TAPE

HOU Burning, Flight.

HAW Go ahead with the burn.

HOU Say again

HAW He is finishing up with the burn.

HOU Roger.

HAW It is all done. He has taken out the residuals.

10, Hawaii.

S/C 10, go.

HAW Got your residuals?

S/C Roger, wait a second.

HAW Okay.

(PAUSE)

HAW Hawaii has LOS.

HOU Roger.

END OF TAPE

This is Gemini Control Houston 46 hour even into the flight. And Capsule Communicator C. C. Williams has just tagged up with 10 via California. Here is how the conversation is going.

GYM Guaymas has ac aid contact.

HOU Guaymas go remote.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C Roger, 10, go.

HOU It looks like a good maneuver, John. With any luck at all we will hit TPI within 4 seconds.

S/C Roger.

HOU That Agena you saw, was that the 8 Agena? or the 10 Agena?

S/C Is the 10 Agena ahead of us?

HOU That is affirmative.
About 3 miles.

S/C Well, that is what we are looking at then.

HOU John, I would like to go over some mission rules for your EVA. You have got a go for your EVA. At your convenience here on the state-side pass, do you want to talk about it now or wait until your next maneuver?

S/C I would like to wait until the next maneuver.

HOU Okay, fine. We are standing by, then.

HOU It runs all the time in tests, I understand, but you can turn it off by turning off your utility light power, and just control it from there. It will be 16 frames per second.

S/C Are you talking about the right hand camera which is broken.

HOU That is right, Mike.

S/C No, that is one of the characteristics of it, is that it does make noises continually in cast whether your finger is on the button or not, it makes the same whirring noises that it does in the other mode. However, it is not working in any mode. The little ratchet inside which turns the - which advances the film inside the magazine is not working.

HOU Okay, I got you. Are you going to use the left hand camera with the bug eye lens for your EVA?

S/C We plan on using the left hand camera, shooting out through the left hand hatch with the 18mm lens for EVA. Do you prefer buy eye EVA?

HOU We will talk about it and I will give you a call later.

S/C Okay.

(PAUSE)

This is Gemini Control Houston. We are about 3 minutes away from this next maneuver, a 9.8 foot per second delta V burn. Another adjustment and his fuel remaining after this burn

should be about 358 pounds remaining. We are standing by. (PAUSE)

S/C ....80 reads minus 110, 81 reads all zips and 82 stand by. Eight-two is minus ...and we burned that one - we burned ...and we burned this one right down the angle.

END OF TAPE

HOU Gemini 10, Houston.

S/C Go ahead.

HOU Roger, request that you go to prelaunch computer please.

S/C Prelaunch with computers.

HOU Roger. Prelaunch and we'll be sending you a load and you'll receive a DCS light.

S/C Houston, Gemini 10. On this camera bit, we're stowed to do it as we said. I shoot camera out the left hand window, if you'd like to change to that please let us know as soon as possible. We've got a lot of restowing to do.

HOU Roger. Our recommendation is this, for the left hand camera, use it in your EVA position with the bug eye 5 mm lens. The right hand camera would then be in the left hand mount for the 18 mm lens and periscope set at 16 feet per second. Correction - frames per second, test position. This is our recommendation only and we'll standby for your decision.

S/C This is 10. We realize one camera is completely inoperative.

HOU Roger, we realize that.

S/C The other question remains, which would you rather have, the bug eye shooting out the right hand open hatch or would you rather have movies of certain selected times shooting out the left. We thought

with the capability to change magazines it would probably better to shoot a couple of magazines out to the left.

HOU 10, Houston. We concur. Change that to read then, to use the workable left hand movie camera out the left hand window where you can change the magazines, etc.

S/C OK, fine.

HOU Gemini 10, Houston.

S/C 10, GO.

HOU Roger. We're almost LOS here but I've got some mission rules for you. Your fuel cutoff to stop the rendezvous - stop what you're doing at that point is 133 pounds or 7 percent on the gage. 133 pounds is 7 percent on the gage corrected. If you arrive at the rendezvous with greater than 170 pounds, which is an indicated 10 percent on gage, you are OK to go ahead with station keeping. 10 Houston did you copy those?

S/C Roger.

HOU Roger, 7 percent cutoff rendezvous, 10 percent for statinn keeping. Also I'd like to give you some recommendations for EVA. The conditions are first the electrical load should be a minimum of 40 amps. The primary coolant loop should use the A pump and then the secondary loop the B pump should be used. If this is impossible

alternate would be the primary B and the secondary A pumps. The suit fan to number one and the ELSS valve either medium or high flow. I've got some additional rules concerning the possibility of eye irritation for John. They are as follows, if eye irritation is experienced select O_2 high rate and just continue with EVA. Now if the ELSS is on medium or high during this time, this rule applies. However, if you must go to high and bypass, then you'll have to discontinue the EVA.

S/C Roger, understand.

HOU Roger. Also medium and bypass is OK. In other words either medium or high or medium and bypass is OK. However, high and bypass is a terminate.

S/C Roger understand.

HOU Roger and realize that those rules we just gave there apply only to the condition where John is experiencing eye irritation.

S/C Roger.

LOS Grand Turk.

END OF TAPE

This is Gemini Control Houston, we have wrapped up the state side pass and I suppose that everyone copied the special rules that will apply during the EVA exercise. A little earlier today, we got some readings and an elapsed time of 40 hours on the water intake of each man, we show that at an elapsed time of 40 hours a total of 9.7 pounds per man for the first 40 hours of the mission and the flight surgeon's console advises this is right on the planned value to that point. In the absence of any negative reports the surgeons assume the men have been consuming their planned 2600 calories per day. They estimated last night the sleep rates, the heart rates during the sleep period ran in the high 40's, low 50's -- just about average for -- in comparison to past flights. Had a few flights when the rates got down into the 30's but they were very rare. At 46 hours, 21 minutes into the flight, this is Gemini Control.Houston.

END OF TAPE

This is Gemini Control Houston, 46 hours 56 minutes. In the intervening periods since our last discussion, we've had a couple of decisions here. For one the one operative movie camera will remain inside the spacecraft during EVA it will be operated by Young looking out of the left window. It will not be mounted on the adapter section by Collins. The other camera is inoperative and so it will not be - no attempt will be made to use it. We also would like to update you on some burns based on data refinement several of the maneuvers will occur some three minutes earlier than planned. Our TPI now is scheduled for 47:25:59 and the terminal phase final 47:45:31. Flight Dynamics says that the orbits of the two objects - the differential heighth between the two is essentially seven miles, and he's showing about 215 on the Agena 8, 208 on Gemini 10. The EVA maneuver itself is to begin if the rendezvous works out according to plan, the EVA would begin in an elapsed time of 48 hours 35 minutes into the flight. It would be concluded at 49 hours 30 minutes. We have now some tape conversations that have backed up during the Press Conference and we'll play them for you now.

HOU Canary from Flight

CYI Go, Flight.

HOU Let them know that that means if you all break compensation.....

CYI Roger. He wants to let (garbled) compensate until then.

HOU Canary Islands, Flight.

CYI Go, Flight

HOU The Agena 8 at an elapse time of 46 hours 27 and a half minutes will be 55 miles in front, 6.8 degrees up, 27 and 1/2 minutes.

S/C Roger.

HOU Go ahead.

CYI Did you all rigidize the Agena? Over.

HOU Standby. Yes we did Canary.

CYI Roger, OK we just noticed the difference.

S/C Canary this is Gemini 10. We'd like to know the position of the 10 Agena when we're at TPI relative .....

CYI Roger standby

HOU Standby

HOU We're running it now, it's going to take a couple of minutes yet.

CYI Say again.

HOU We're running the Agena 10 position now it's going to take a couple of minutes.

CYI Roger.

HOU But we'll get it to them.

S/C This is 10, Roger thank you.

CYI Roger.

S/C 10, Roger

CYI Flight, Canary,we've had LOS both vehicles. Both are .....

HOU Gemini 10, Houston. We're standing by.

S/C 10, Roger.

ASC Ascension, LOS

KNO Kano is remote.

S/C Houston, this is Gemini 10. Over.

HOU Houston, Gemini 10. Go ahead.

S/C Did you get the update to the parameters, you left them out.

HOU We're working on those right now. We're trying to get some late tracking here and we'll give them to you as soon as we can.

S/C OK.

HOU Right now our feeling is that you'll probably be about three minutes early to TPI.

S/C Roger. OK.

HOU We'll pass this just as soon as we can get it. The Agena presently is in about a 215.7 by 216.4 orbit, so it looks good.

S/C Roger.

HOU Of course these left right, up down maneuvers that we pass up to you will be relative to you as you sit in the cockpit.

S/C Roger.

AFD Carnarvon Cap Com, AFD.

CRO AFD Carnarvon

AFD Roger Carnarvon. We'd like for you to get the cryo readout PCM count either before or during

fuel cell purge.

CRO Roger.

TAN Tananarive is remote.

HOU Gemini 10, Houston.

S/C Go ahead

HOU Roger. We're still working on your update quantities. Right now we have your delta H at 7 miles and it's so close that we cannot see any co-ellipticity at all.

S/C Roger.

HOU Gemini 10, Houston.

S/C Gemini 10, GO.

HOU Roger. We've got some range and elevations of the 8 Agena and the 10 Agena at TPI for you. For the 8 Agena it will be approximately 15.3 miles at an elevation of 27 degrees. The 10 Agena will be at 4.5 miles minus 19 degrees. This is all relative to your local horizontal.

S/C Roger. Understand the 10 Agena is 19 degrees below us.

HOU That is affirm.
Additionally at sunrise, you'll see the 8 Agena at a range of about 29.4 miles and the elevation should be 13.5 degrees.

S/C Roger, we understand.

HOU And finally we'll be giving you your information for the rendezvous over CRO.

TAN Tananarive has LOS.

This is Gemini Control Houston. We are now over CRO and we'll pick up that conversation.

CRO Go ahead.

HOU TETB 47 plus 27 plus 20, TET Agena sunrise 47 plus 04 plus 03, ET Agena sunrise 23 plus 17, forward 24.9, 1.1 up, 3.3 left, target azimuth 0, target elevation 32.9, range at 2 miles, ET since TPI 16 plus 16, range rate 47.8, ET at 1 mile, 18 plus 46, range rate 44.4. Delta H 7 miles, direction of the up and down and the left right components are relative to the crew in the cockpit.

CRO Copy that.

HOU It's on the way to you.

CRO Carnarvon has telemetry solid, Agena and Gemini. Systems are go.

CRO Gemini 10, Carnarvon.

S/C 10, GO.

CRO Roger would you place your quantity read switch to O_2 please.

S/C O_2

CRO Roger. We'd like a propellant quantity readout.

S/C Roger. It reads about 31 percent.

S/C We need the Agena (garbled) time.

CRO OK. I've got a backup update for you if your ready to copy.

S/C Go ahead.

CRO GETB 47 27 20, GE.....

END OF TAPE

CRO GET Agena sunrise 47 04 36. Okay will you place your quantity read to H2. Elapsed time for Agena sunrise the TPI 23 17, 24.9 forward, 1.1 up, 3.3 left. Target azmuth is zero, target elevation 32.9. Elapsed TPI range at two nautical miles 16 plus 16. Range rate 47.8. ET TPI range one nautical mile, 18 46, range rate 44.4, Delta H seven nautical miles and the direction of the left-right, up-down is relative to the crew in the cockpit.

S/C Roger, thank you.

CRO Roger. Have you started your purge yet?

S/C Negative

CRO Okay, let's do it. Okay? Now for your information, TPI will be about 1½ minutes earlier than nominal vice the three minutes sent up earlier.

S/C Roger.

HOU FLIGHT Carnarvon, Flight.

CRO Go ahead flight.

HOU FLIGHT The variation around the Delta H is plus or minus two tenths of a nautical mile. The variation around the 7.0 Delta H is around plus or minus...

CRO Ten, Carnarvon, a little bit more information, your variation around Delta H is seven nautical miles is plus or minus two tenths of a nautical mile.

S/C Roger.

END OF TAPE

This is Gemini Control Houston. C. C. Williams has just put in a call to 10 over Canton. We'll cut in there live.

(PAUSE)

This is Houston. It's going to be an extremely long pass. The Canton circle overlaps the Hawaii area of acquisition. Probably be in the order of 8 to 9 minutes and it will be during this pass that the terminal phase initiate on this final rendezvous maneuver will be attempted. That is to come - we're now showing 22 minutes, 25 seconds after 47 hours, 22 minutes, the TPI to take place at 47:27. At the completion of this maneuver the spacecraft should show onboard, if it goes according to plan, 334 pounds of propellant remaining. 25.1 foot per second burn.

HAW Hawaii has C-Band track.

HOU Roger, Hawaii.

HOU You're within a couple of minutes of that burn, ED.

HAW Say again, Flight.

HOU He's within a couple of minutes of that burn.

HAW I can't read you too well.

HOU I say, he's within about two and a half minutes now of this burn.

HAW That's affirmative.

HAW Agena TM solid at Hawaii.

HAW Gemini TM solid at Hawaii. Both vehicles are go.

HAW Gemini 10, Hawaii.

HOU Just give him a standing by.

HAW 10, we'll be standing by watching your burn.

HOU Hawaii, Flight. See if you can mark the burn time for us.

HAW Roger.

HAW Start of the burn, Flight.

HOU Roger.

HAW Quite a bit early.

HOU Yes, he's about 14 seconds.

HAW He's ceased burning. He's just ... out of his control.

HOU Roger.

HAW It looks like he's going to burn some more here.

HOU Does it look like residual burning, Ed?

HAW That's about it. He got a little on the down firing. Mostly pitch down, pitch up and yaw right and left.

HOU Hawaii, Houston Flight.

HAW Flight, Hawaii.

HOU We'd like to get your Delta T readout of the aft firing thrust burn.

HAW The aft firing thruster?

HOU During the main burn.

HAW 10, Hawaii.

S/C 10, go.

HAW Do you have some residuals for me?

S/C garble

HAW Okay, standing by. I have plenty of time.

HOU Never mind their residuals, Ed.

HAW Okay.

HOU Let's wait and see what he does.

HOU We need an OBC.

END OF TAPE

HOU Hawaii from Flight

HAW Flight Hawaii

HOU Did you send a Gemini main prior to the burn?

HAW That's negative. We were having intermittent telemetry.

HAW In fact he started the burn when we still had intermittent TM.

HAW Flight, Hawaii

HOU Go

HAW OAMS helium pressure, George Charlie 01 13 70 psi.

HOU Right.

HAW OAMS helium temperature, George Charlie 02 48.8 degrees.

HOU Roger.

HOU Hawaii from Flight. We'd like another OBC.

HAW Roger.

HOU Also Guaymas send us a couple of Gemini mains.

GYM Roger Flight.

S/C We're burning now.

HOU Say again.

HAW OK Flight he's doing a big burn here using his down firing thrusters. Getting a lot of OAMS right and left activity.

S/C Let's see our first correction was 4 up

This is Gemini Control Houston, we've lost contact from Hawaii but we should pick up via California momentarily. Our time now

47:34 so the spacecraft would be approximately 6 miles about make it 7 to 7 1/2 miles slant range from the Agena 8. The - at the moment of this terminal phase initiate the Agena 10 was 4.5 miles below and slightly ahead of the spacecraft. If the rendezvous continues in a nominal way, the Agena 10 would be 19.4 miles below and ahead of the rendezvous combination of Agena 8 and Gemini 10. Still no contact from California but it should come just any second.

This is Houston. Present plans for the Agena 10 call for a maneuver after splash, after the Gemini 10 splashes down tomorrow. The plan is to fire the Agena 10 which still has 3600 feet per second aboard her, fire her into a high orbit. An orbit with an apogee of approximately 750 nautical miles, a perigee of 90 miles, leave the Agena 10 at that orbit for several revs, there is no set number of revs at this time. Once all the elements of that orbit then the plan would be to fire the Agena one final time and circularize the Agena 10 orbit at 190 nautical miles and leave it there as a target of opporutnity for a later mission. All this to come after the splashdown of Gemini 10. Now we expect some communication, we'll cut back in.

GYM Guaymas remote

CAL California local

This is Houston we're still standing by. The crew obviously working and not talking, at least not talking to the ground. We're at 47:39, terminal phase final to come at 47:47.

END OF TAPE

Gemini Control Houston, nothing new to report from the Hawaii pass. We'll come back up when something else develops, meanwhile, we'll stand by and continue to monitor the line for any voice conversation.

GYM Houston Flight, Guaymas.

HOU FLIGHT Go ahead.

GYM We just lost our computer, we got your DOVC and two man's out.

HOU FLIGHT Roger.

GYM Guaymas to flight, he's pretty close to the second correction.

HOU FLIGHT Roger.

This is Gemini Control Houston, at this point the two vehicles should be approximately four miles apart, four miles slant range.

GYM We're getting a lot of forward firing now flight.

HOU FLIGHT Roger.

This is Gemini Control Houston, we've been following this movment we expect he's within one mile of the Agena 8 right now. The fuel consumption appears not to be unusually high and he should be entering the period where his final breaking maneuver start taking place. We'll go back and monitor.

END OF TAPE

This is Gemini Control Houston. It has been a little more than 20 minutes since transfer and as Glynn Lunney put it we should be right there about now. He has been carrying on a running conversation with our guidance navigation officer, Gary Coen, Coen watching telemetry and observing and calling about every blip of the thruster. Still no report, of course, from the crew. We will go back and monitor.

HOU Gemini 10, Houston.

S/C This is 10, go.

HOU See anything of the Agena 8 around?

S/C Yeah, we are about, I guess, 7 or 8 hundred feet out.

HOU Fantastic, John.

S/C Yes. I don't believe it myself.

HOU We do. What is your fuel quantity, John?

S/C Fuel quantity is over 20 percent, Al, a little over.

HOU Good show.

This is Gemini Control Houston. The first estimate on the fuel usage in this rendezvous looks to be something over 110 pounds. This is an unofficial estimate. It will be refined later. However, if it holds up, it would be far and away the most economical rendezvous transfer maneuver made. We will stand by monitor for any additional conversation.

This is Houston. Our guidance navigation control officer is reporting that he is really hitting it now. He is using quite a lot of fuel. To close this last - his last report was 7 or 8 hundred feet. He is watching quite a lot of thruster activity. Correcting some out of plane. And the flight director has advised our Capsule Communicator Al Bean not to bother them right now. We will wait until they get to Ascension before we raise them. We are due to leave the Antigua area momentarily. Ascension will come in at 48:03 and we are at 47:57. Let's monitor out the last minute or so of this live pass.

HOU Gemini 10, Houston. We indicate somewhere around 140 pounds.

S/C You are awfuly garbled. We are station keeping just about - stand by one.

HOU Roger, when you get a chance give us a feel for the Agena attitude and also your propellant quantity remaining.

S/C (Garbled)
Now we are station keeping. The docking light is on and the propellant quantity - John, can you read that out? 12 percent. 12 percent.

HOU Roger.

S/C Spot 15 percent. What was that information you wanted? I didn't copy?

HOU What is the attitude of the Agena and what is it doing?

S/C You are unreadable.

HOU What is the Agena attitude?

S/C Roger he is - engine down.

HOU Roger, is it pretty well stablized?

S/C Solid as a rock.

This is Gemini Control Houston. And that very comforting report, first by Collins, he reported the Agena is engine down and the Young followed with a report that it was as solid as a rock. This brings much comfort to the people in planning this EVA exercise. The one big unknown there was the rates that the Agena 8 be in, a tumbling or a kind of oscillating, might have changed our EVA plans. But apparently with this stability, we can proceed. It had been theorized before the mission that the dynamics of the Agena 8 were such that the crew would probably find it in an engine down position, much like an automatic pencil with the button end assuming the role of the engine, pointed to the earth all the way around. We will come back up when Ascension acquires some 3 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. We should reacquire through Ascension momentarily. Our present estimate is that we would still need about 35 pounds of propellant. Now Alan Bean is tagging up with Gemini 10, let's cut in there.

HOU About 665.

S/C Our O_2 pressure at 740.....(garble)

HOU Roger. We're standing by for your propellant quantity reading.

S/C 15 - 15%. CQI 15.

HOU Roger, 15.

(PAUSE)

This is Gemini Control Houston. We expect no further communication with 10 during this pass across Ascension. He's not yet left the Ascension area but there is no indication that we'll have further com. Meanwhile, a large conference is in progress around the Flight Director's console and the attempt is to pin down the onboard quantity, be assured of any gauge in accuracies onboard or in our TM readouts. This is Gemini Control Houston at 48 hours, 12 minutes into the flight.

END OF TAPE

This is Gemini Control Houston. We expect an acquisition at Tananarive within about 20 seconds. I believe Al Bean our communicator will talk to 10 via Tananarive. Meanwhile the conversation on the onboard quantity continues. It involves the Gemini Program Manager, Chuck Mathews, the Flight Director, Glynn Lunney, Donald Slayton, Bill Schneider, the Mission Director, clustered around the Flight Directors desk. Also two GNC men, Gary Coen and Arnold Aldrich. We've got a call going into 10, let's listen.

S/C Go ahead

HOU Roger, we're taking a close look at your fuel quantity on the ground here. Could you give us another reading of your propellant quantity.

S/C (garbled)

HOU Roger. Understand you still are reading 15 percent.

S/C Affirm.

HOU How is the station keeping going and do you think you're using much fuel in performing that operation?

S/C (garbled) we're in platform mode.

HOU Roger say again your remark about S-10.

S/C I'm looking right at it.

HOU 10, Houston. Just continue with the EVA prep and we'll look at you again over Carnarvon. Over

S/C Roger.

HOU Carnarvon from Flight.

CRO Go ahead Flight, Carnarvon

HOU I'm going to want a number of Gemini mains from you.

CRO OK.

S/C Would you believe that the main (garbled) is off the status display panel?

HOU 10, Houston. Say again the information about the status display panel.

S/C Yes. For some reason the main light is off. However, (garbled) between those two tanks must be pretty low.

HOU Roger.

HOU Roger, did you say that light was on or off?

S/C Off of course.

HOU Roger.

This is Gemini Control Houston 48 hours 24 minutes. A bit of explanation needed on that last bit of conversation I think. Young stated in jest twice,repeated it for us and got some - got a pretty good laugh among the Flight Controllers. He said that the main red light on the Agena display panel was off. The signifigance of this is that if in a live Agena case if that light is ON the Agena is NO GO and it means to stand clear. Of course, John was just reemphasizing that the Agena 8 is dead, electrically, and called down the fact that the main red light

was off. We expect no additional com during this Tananarive pass although we're only in the middle of the pass. Perhaps we should monitor for another minute or two. We'll standby.

HOU Carnarvon from Flight

CRO Go ahead Flight.

HOU YOu were calling me.

CRO Roger. Just wanted to know how far you'd gotten on his checklist.

HOU On his what?

CRO On his pre EVA checklist.

HOU He's working his way right through it.

CRO Ok I haven't said (garbled)

HOU Negative

CRO OK.

CRO Flight, Carnarvon

HOU Go ahead

CRO Roger. I'd like to know the status of the TM and C-beacon switches in the spacecraft.

HOU The what?

CRO The TM switch and the C adapter.

HOU Real time and acq aid and continuous.

CRO Roger.

HOU Go ahead

HOU Gemini 10, Houston go ahead.

S/C Roger. What's the elapse time to sunrise. Over.

HOU Roger. Sunrise time will be 48:36.

S/C Roger.

HOU Roger. We've been looking at your fuel down here and it looks real good.

S/C Roger. It looks good to me too.

END OF TAPE

TAN Tananarieve has LOS.

This is Gemini Control Houston, 48 hours, 29 minutes and that wraps up the communication via Tananarieve. Next up Carnarvon at an elapsed time of 48 hours, 35 minutes. We will take a reading on the fuel gage and get a final status check before we start EVA according to present plans on reaching Carnarvon. It would probably take two to three minutes to get all the necessary readouts, Carnarvon should be a pretty good long pass in the order of six minutes and hopefully we can get the EVA underway. You heard John Young checking for the local sunrise. This EVA, of course time too will start as soon after sunrise as possible. This is Gemini Control Houston.

END OF TAPE.

This is Gemini Control Houston. We expect acquisition by Carnarvon in a very few seconds. And the general plan at this point is to look at the onboard systems, particularly the remaining fuel. We don't know exactly how far Gemini 10 is station keeping with the Agena 8. The word itself means on the order of something under 50 feet. In general parlance and it is probably much less than that. Because at one point John Young said he was looking right at the S-10 micrometeroid experiment on the Agena 8. Hopefully, Mike Collins will be able to recover that. Carnarvon has Gemini solid, has TM solid.

HOU When he gives you a PQI readout, ask him how he feels the station keeping is going?

CRO Say that last.

HOU When he gives you a PQI readout, ask him if he feels the station keeping is going cheaply or expensively.

CRO Roger.

You can hear Glynn Lunney relaying instructions to the Carnarvon flight controller. The estimate on propellant usage during EVA is presently shown at 35 pounds. That is the expenditure we expect.

HOU Carnarvon, send us another main.

CRO Roger, that. We are reading for zero volts on squib one and two.

HOU Better mention it to them.

CRO Roger. 10, Carnarvon

S/C 10, Carnarvon.

CRO Roger. We are showing - give us a reading on squib voltage.

S/C Roger, we are busy right now...what is the matter with that squib voltage?

CRO It looks like you turned it off. We are showing zero down here.

S/C Garbled

CRO Thank you very much.
We got it back.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU PQI readout.

CRO Roger, that. We would like to talk quantity when you have got a chance.

S/C Roger. It looks like 14 percent. I can't get over there to read it any lower.

CRO Roger. (PAUSE) We would like to know whether or not you think you are using excessive or reasonable amount of fuel for your station keeping.

S/C Roger, it is a reasonable amount, I think.

CRO Okay.

HOU There is a couple of more mains, Carnarvon.

CRO Roger. Okay, Flight, we are showing him depressing the cabin.

HOU Say again.

CRO We show him starting to depress the cabin.

HOU Roger.

The fuel usage that Young has been calling out the last report 14 percent, is estimated on the order of slightly more than a hundred and 30 pounds of onboard propellant. And this is very close to the guide line established. We have a lower limit that would conclude the activity, should at any time they reach the 65 pound remainder. This would be used to adjust to a lower perigee to set up for reentry, sometime tomorrow. Cabin is depressurizing. Carnarvon reports all systems are go on Agena and Gemini.

HOU Carnarvon Com Flight.

CRO Go ahead.

HOU Tell him to go ahead with the rest of the station keeping.

CRO Roger.

The flight director has directed that Carnarvon tell them to continue station keeping.

S/C I am glad you said that because Mike is going outside right now.

CRO Good luck, Mike. We are showing 797 on O_2 pressure.

HOU Okay.

CRO Do you want them to go manual? 792 pressure.

HOU Pump it up Carnarvon.

CRO 10, Carnarvon. Go manual on the OT heater, pump

CRO it up a little bit.

S/C Roger OT heater is on manual.

This is Houston. The hatch is opened. Collins is leaving the spacecraft. We estimate that the hatch opened at an elapsed time of 48:hours 42 minutes. We will go back and monitor for the first conversation outside.

CRO We are showing a right 2 delta P at 3.46 steady.

HOU Roger.

CRO Cryo pressure back to 801 and climbing.

HOU Computer - go ahead (CRO and HOU simultaneous) lower limit on GCOl .900 --

CRO 320 ...

HOU Right.

CRO All systems go.

END OF TAPE

CRO Okay, we're at 811 on the O_2 pressure. Is that good enough or do you want him to keep it in manual for awhile?

HOU Say again, Carnarvon.

CRO We're showing 816 on O_2 pressure. Do you want to keep it in manual?

HOU Yeh, you can tell him to leave it in manual.

CRO Okay. We'll have him leave it in manual.

The first activities that Collins will engage in outside will be to activate a small button raising a handrail on the adapter. Then he will plug his umbilical line in - I'm sorry, his handheld maneuvering line in to a nitrogen source on the adapter. He will ensure he is getting good flow from the little handheld maneuvering unit very similar to the one Ed White used on his space walk. And once he's sure that that little unit is operating all right, he will move over to the Agena. The plan was for Young to take up a station about five feet away from the Agena and would attempt to recover the micrometeorite experiment. He will also retrieve a micrometeorite experiment off the adapter of his own spacecraft. He will not install a movie camera outside because of the two onboard. Only one is operating and they decided that Young will operate that out his window and give him, thereby, a chance to change magazines during the EVA period. We have lost signal now with Carnarvon. We will go back and rack up the entire tape and play it throughout the Carnarvon pass. Repeat play for you.

HOU Stand by, Carnarvon.

CRO Roger.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU I want a PQI readout from him also.

CRO Roger.

CRO Carnarvon has telemetry solid Agena and Gemini.

HOU Roger.

CRO Systems are go.

HOU Roger. Get us a main.

CRO Coming your way.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU And when he gives you a PQI readout ask him how he feels the station keeping is going.

CRO Say again, Flight.

HOU When he gives you the PQI readouts ask him if he feels the station keeping is going cheaply or expensively.

CRO Roger.

HOU Carnarvon, send us another main.

CRO Roger. We're reading zero volts on squib 1 and 2.

HOU Better mention it to him.

CRO Roger. 10, Carnarvon.

S/C Go.

CRO Roger, we're showing, I guess, the reading of squib plus voltage...

S/C Roger. We're a little busy right now. We'll play with it a little bit later on.

CRO It looks like you turned it off....to zero down here.

S/C garble

CRO Thank you much.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU PQI readout?

CRO Roger that.

CRO We'd like a propellant quantity when you get a chance.

S/C It looks like....(garble)

CRO Roger.

CRO We'd like to know if you think whether or not you're using excessive or reasonable amount of fuel for your station keeping.

S/C Roger. It's a reasonable amount, I think.

CRO Okay.

HOU Send us a couple of more mains, Carnarvon.

CRO Roger. Okay, Flight. We're showing him depressing the cabin.

HOU Say again.

CRO We show him starting to depress the cabin.

HOU Roger.

CRO O_2 tank pressure is still above minimum. All systems looking good. We show right suit Delta P rising very nicely along with left suit Delta P.

HOU Roger.

CRO Cabin going down very nicely also.

HOU Roger.

CRO .....on Agena and Gemini.

HOU Roger.

HOU Gemini bravo.

CRO Roger. Okay, we're showing about 801 on cryo tank pressure O_2.

HOU Carnarvon, Houston Flight.

CRO Go ahead.

HOU Tell him to go ahead with the rest of the station keeping.

CRO Roger. 10, Carnarvon. You have a go for the rest of the station keeping.

S/C Roger. How about the EVA? You want it?

HOU That's what we mean.

CRO That's what we mean exactly.

S/C I'm glad you said that because Mike's going outside right now.

CRO Good luck, Mike.

CRO We're showing 797 on O_2 pressure.

HOU Right.

CRO Do you want him to go manual? 792 pressure.

HOU Pump it up, Carnarvon.

CRO 10, Carnarvon. Go manual on the O_2 heater. Pump it up a little bit.

S/C Roger, the O_2 heater is on manual.

CRO We're showing a right suit Delta P of 3.46 steady.

HOU Roger.

CRO Cryo pressure back to 801 and climbing.

HOU Rog. How's the left suit pressure?

CRO 3.8 on the meters.

HOU Right.

CRO All systems go. Okay, we're at 811 on the O_2 pressure. Is that good enough or do you want him to keep it at manual for awhile?

HOU Say again, Carnarvon.

CRO We're showing 816 on O_2 pressure. Now do you want to keep it at manual?

HOU Yeh, you can tell him to keep it in manual.

CRO Okay, we'll have him leave it in manual.

HOU Hawaii from Flight.

HAW Flight, Hawaii.

HOU Coming at you, Ed.

HAW Let her go. What do you show on the top of the Dome?

CRO Carnarvon has LOS Agena and Gemini. All systems were go at LOS.

HOU Roger, Carnarvon.

This is Gemini Control Houston. We're 48 hours, 52 minutes into the flight. We estimate now that Mike Collins has been outside about ten minutes and this should carry him through his first

two sequences. They include the recovery of the micrometeorite package on the adapter of Gemini 10. He also should have checked out the flow of his little hand held maneuvering unit. The next period from roughly ten minutes to 30 minutes elapsed time in the EVA call for him to move over to the Agena, to recover that micrometeorite package and this should occur during the period of Hawaii acquisition. Hawaii will acquire at 49 hours and one minute elapsed time. That's about eight minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, Hawaii acquired right on the second TM contact with the Gemini. No voice contact as yet. Two things are being watched very carefully during the EVA, of course any new eye irritation that cropped up in the EVA of yesterday and we have no indication of that yet. And we had none during the EVA prep exercise earlier this afternoon. The other thing is the fuel consumption -- we feel its close but adequate. And we're monitoring for any new conversation developing over Hawaii. We've had none as yet.

This is Gemini Control Houston. Our Flight Surgeon Dr. Berry advises that Mike Collins' heart rate presently is reading 110 beats per minute. He said as he left the spacecraft it was up about 130, it settled down immediately, presently showing 110.

This is Gemini Control Houston, now we've had established voice contact and the first report from John Young was that Mike went over there and picked up that S-10. He plucked it right off the Agena. Here's the conversation as it develops as we move across Hawaii.

S/C	....so we think we had better not fool with it anymore.
HAW	Okay.
HOU	We'll concur with that.
HAW	Flight, we're having very poor Gemini telemetry.
HOU FLIGHT	Roger.
HAW	What's your position on your heater.
S/C YOUNG	I just went back to auto.
HAW	Okay, you should be just about to the mid-point. You're okay, you should be good for almost the rest of the EVA.

HOU FLIGHT Hawaii from Flight.

HAW Go ahead.

HOU FLIGHT Tell them not to spend any more fuel trying to stay with the Agena.

HAW Okay.

Ten, you can disregard saving fuel any more staying with the Agena.

HOU FLIGHT Save the fuel, stay away from the Agena.

HAW Did you say stay with the Agena?

HOU FLIGHT No, disregard that, we don't want you to stay with the Agena. Just save fuel.

HAW Okay.

HOU FLIGHT Did you get any solid TM yet, Ed?

HAW It looks pretty good now flight. Locking up. We're sending you summaries.

HAW Cryo 2 is reading 10 10 psi.

HOU FLIGHT Roger. What's the OAMS source?

S/C YOUNG We're not saving much fuel in rate command with Mike out there bumping things.

HAW Flight, did you copy that?

HOU FLIGHT Say again.

HAW He's not saving much fuel in rate command with Mike bumping things, do you want to change modes?

HOU FLIGHT Tell him to save that fuel.

HAW Okay.

Use any mode you can to save as much fuel as possible.

S/C YOUNG Roger.

HAW The OAMS is reading 847 flight.

HOU FLIGHT Right.

S/C COLLINS Okay, Houston, this is Gemini 10. Everything outside is about like what we predicted only it takes more time body positioning seems to be the problem. Although the nitrogen line got connected without too much of a problem. When I translated over to the Agena I found that the lack of hand holds is a big impediment. I could hang on but I couldn't get around to the other side which was where I wanted to get around to. Finally I did get around to the other side and I did get the S-10 package and the nose bearing both off and John now has them, however, there's a piece of the shroud hanging -- or part of the nose of the Agena that came loose and I was afraid I'd get snarled up in that, and so was John, so he told me to come on back. So, the new S-10, which I was going to put on the Agena I didn't and I'm just now throwing it away. Also I lost my EVA Hasselblad inadvertently, I'm sorry to say. I'm getting ready now to do some gun evaluation.

HOU FLIGHT Hawaii from Flight.

HAW Go ahead Hawaii.

HOU FLIGHT Tell him to use his no more fuel.

HAW Roger. 10, Hawaii.

S/C YOUNG Ten, go ahead.

HAW Okay, we don't want you to use any more fuel. No more fuel. Over.

S/C Well then we'd better get back in.

HOU Get back in.

HAW Okay, get back in.

S/C YOUNG Come on back in the house.

S/C COLLINS Okay.

This is Gemini Control Houston, 49 hours, 10 minutes into the flight. I believe you heard the decision of the Flight Director relayed out to Gemini 10 to conclude the EVA, the reason being we were showing a rather high fuel consumption during the period between Carnarvon and Hawaii, a reading from Hawaii while it was of a fairly intermittent nature, the TM was, the best guess we have is something on the order of 90 pounds remaining. It has been decided that that's as low as we care to go on usable propellant on-board. No additional conversation now from the spaeecraft. We'll continue to monitor. We should have another minute or two in the Hawaii circle.

END OF TAPE

S/C OK Houston, Gemini 10. I've disconnected the nitrogen line and I'm standing up in the hatch here. John's not firing the thrusters anymore. We're just going to take a little rest and make sure we both know what we're doing before we press on with the ingress.

HAW Roger, this is Hawaii. Take your time, get all squared away and they'll pick you up over the states shortly.

CAL California is remoted.

HAW Hawaii has C-band LOS.

This is Gemini Control Houston 49 hours 12 minutes and we have - we're out of contact with the spacecraft via Hawaii. Recapping what Collins said, he said as he recovered the micrometeorite package off the Agena 8 he inadvertently dropped his hand-held camera, what he actually said was the Hasselblad. This is a hand-held still camera that he carried with him outside the spacecraft. Recall earlier that he had no EVA movie camera mounted. Presumeably Young got some good pictures of what went on outside. The fuel estimate for the total EVA had been set at 35 pounds. According to a rough telemetry estimates we used something on the order of 50 pounds between Carnarvon and Hawaii. The control task of station keeping apparently a little bit more then had been planned for. The principal event we missed during the EVA was simply that - there were two events primarily and they would have been the most fuel costly events. One was

for the pilot to translate out 30 to 50 feet and evaluate the tether. The second major event was for the pilot to be passive and let the command pilot translate the spacecraft over to him. That event plus some additional umbilical evaluation would have wraped up the EVA exercise and the crew apparently is on its way back in right now. California is remoted, let's stand by for any signal there.

GYM Guaymas is remote.

CAL California local.

HOU Gemini 10, Houston.

This is Gemini Control Houston, now with the spacecraft approaching West Texas, Al Bean has put in a call and let's see what the situation is onboard.

HOU Gemini 10, Houston.

This is Gemini Control Houston, the suspicion is here that the two are probably engaged in closing the hatch, which would probably account for them not returning Al Bean's call. I've also been handed a note from Chris Kraft. After conversing with our onboard fuel experts, says that the estimate now is something on the order of 110 pounds on board. That's 20 pounds better then what he thought. But this will be refined after the stateside pass when all the fine data is compared. Al Bean is about to put in another call, let's standby and see if we get an answer.

END OF TAPE

GYM Flight, Guaymas

HOU Go ahead

GYM Ok. Looks like he's knocked that yaw gyro off. He's still got pitch and roll but no yaw.

HOU OK.

GYM Looking good.

This is Gemini Control Houston 49 hours 22 minutes and within the last 30 seconds we got a report from Guaymas that the crew is repressurizing the cabin. Repressurzing the cabin which would probably make hatch closure some 3 minutes before that event, 3 to 5, I'll have to get a better number on that later. The cabin reading at last check was 4.7 pounds and still climbing. It will probably get up in the 5 pound range. This has to be the quietest EVA of all the EVA's we've gone through to date. Not a word said since we left Hawaii. The heart rate we're observing on Mike Collins shows settling down even from the 110 which was the last value we saw outside. There was a spurt of activity which could be expected with hatch closure and that is settling out now with the repressurization. Mike will have a fairly activity period of reriging himself for the remainder of the flight. According to the present plans we would reopen the hatch to jettison certain equipment at an elapse time of 50 hours and 35 minutes. That pretty well sums up the situation right now. This is Gemini Control Houston.

We're still going to stand by and monitor for the remainder of the U. S. pass.

This is Gemini Control Houston still no word from our two spacemen. We're setting up now fairly soon for about a one foot per second burn to separate from the Agena 8. Get comfortably away from it. The cabin repressurization is complete now and the cabin sealed off at 5.6 pounds per square inch. According to the best estimates the crew is probably busy assembling the gear that will be jettisoned during this next brief hatch opening, which is to occur 50 hours 30 minutes. One hour from now. That event will occur over just before the Hawaii pass and the hatch is to remain open on the order of 10 or 15 minutes. With the spacecraft now over the northeast coast at South America we still have time for voice contact, but we're not at all sure that we will have it.

HOU Gemini 10, Houston.

There goes our call and let's standby and monitor.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

END OF TAPE

S/C Houston, this is Gemini 10, over.

HOU Gemini 10, Houston, go ahead.

S/C Roger, you can't believe what we've got in the cockpit with .....but it turned the radio off.

HOU Roger that's what we expected. We also noticed you turned off your yaw rate gyro, and your C-band beacon circuit breaker.

S/C Well we can't even get to those things right now, we'll have to pick those up later.

HOU Roger. I don't know if this is possible or not now, but as soon as you get the opportunity you might check the 8 Agena and if it is possible put in a 1 foot per second retro-burn.

S/C I have no idea when you'll.....

HOU Roger. When you make that burn, write it down would you?

S/C Yes, Sir.

BAH LOS, Grand Turk.

HOU Gemini 10, Houston. How was the hatch closing?

S/C It was better than a piece of cake.

HOU Good. We'll be LOS in about 1 minute.

S/C Not much problem on it, I didn't have any trouble.

HOU Roger, we'll be LOS in about one minute.

S/C .....it's because there is about 30 foot of hose wrapped around me.

We may have difficulty getting him out.

HOU Roger.

This is Gemini Control Houston, 49 hours 36 minutes into the flight. And John Young just cleared up the big mystery attached to the long silence. He said they inadvertly had the radio turned off, and that certainly explained why he did not hear Al Bean's call. All the time of course we were reading the telemetry here on the ground and knew that the spacecraft was quite stable and could observe a little movement there as the crew adjusted and closed the hatch. Apparently the long umbilical coiled up in Mike Collins' lap, is quite a burden, and the crew now is working to get that, the chest pack, we're not just sure of what else, whether Mike jettisoned the hand-held unit before he came back in or just what the status of it and several items is but these will be bound up in a ball and will be thrown over board a little less than an hour from now. Another contact coming up via the RKV, in about 2 minutes from now, this is Gemini Control Houston.

END OF TAPE

Gemini Control here 49 hours 39 minutes and the Rose Knot Victor has acquired here. Here is how that conversation is going.

RKV The Agena clock has reset and it is lagging about a half a second.

HOU Roger, RKV.

RKV Goss Charlie 01 0 first helium pressure is reading 847.

HOU Say again. 847. Right.

RKV Roger.

(PAUSE)

HOU Gemini 10, Houston.

S/C 10, go.

HOU Roger, we wondered if the ELSS performed satisfactorily and if it did we will give you a go to jettison it with the rest of the equipment.

S/C Roger. The ELSS works fine Al. I worked it on medium flow for a while and got slightly warm and went to high flow, but I felt it ...as far as pressure went and as far as all the ...and lights and what not, it worked perfectly. So I don't have any complaints at all. It seemed to work perfectly.

HOU Good, how are you coming as far as getting untangled from the umbilical?

S/C We are about half way in.

HOU Good.

S/C Say, this place makes the snake house at the zoo look like a Sunday School picnic.

HOU Roger.

END OF TAPE

HOU Gemini 10, Houston.

S/C Go.

HOU Roger. We're about one minute to LOS here. For your information we plan to have you reduce your altitude in two separate burns. The first depleting your fuel all except the VolksWagon tank and the second utilizing it. We'll be talking to you more about that later.

S/C Roger. We're still trying to stow this stuff up here, over.

HOU Roger. We're not in any hurry. Just wanted to keep you informed.

S/C We're reading ..... on TPI's.....

HOU Roger.

S/C When I get on there and pump the power lights out, we're reading about 9.

HOU Roger, understand when power lights removed you're reading about 9%.

S/C That's right.

ASC Ascension LOS.

Tananarive go remote.

TAN Tananarive remote. We have acquisition.

HOU Gemini 10, Houston. We're standing by.

S/C Okay, Houston. We're still cleaning up the mess here .....

HOU Roger.

S/C How about giving us a rundown on the next attitude report. We're .....

HOU Roger, wait one.

END OF TAPE

S/C Houston, 10

HOU 10, Houston. Go ahead

S/C Could you give us a brief run down on the (garbled) the burn you mentioned and when their scheduled (garbled)

HOU Roger we will.

HOU I'll call you back in about one minute.

S/C Roger.

HOU Houston 10 go ahead. We do not copy that.

S/C I said it sounds as if (garbled) instead of vice versa.

HOU Gemini 10, Houston.

HOU Gemini 10, Houston.

S/C Gemini 10, GO.

HOU Roger. It looks like your first burn will take place about 51:39, which is roughly an hour and a half from now. The second burn will take place at 53:11 but we'll be talking with you about these two burns later on. By splitting the heighth adjust into two separate burns, we hope to get a better handle on your final parameters. The open hatch time was scheduled at 50:30, which is about 30 minutes from now, If you're prepared to do it then.

HOU Gemini 10, Houston. Did you copy that last?

S/C Let's work one and then (garbled) let you know.

HOU	Roger, We'll be standing by.
S/C	O.K.
	(PAUSE)
HOU	Gemini 10, Houston, we're about a minute and a half from LOS.
S/C	Roger.

END OF TAPE

HOU We are going to make two maneuvers later on today. It is to adjust the orbit and we'll be putting them to bed after that.

CRO O.K.

HOU And the spacecraft and crew are very good.

CRO O.K.

HOU O.K., any questions?

CRO That's negative, Al.

HOU O.K., we'll see you later, Gary.

CRO O.K., thank you.

HOU Houston, Out.

HOU Carnarvon from Flight.

CRO Go ahead, Flight, Carnarvon.

HOU Ken, we need to get four Gemini mains from you this pass.

CRO O.K.CRO

CRO Carnarvon has ac aid contact Agena. Agena TM solid all systems go.

HOU Roger.

CRO Carnarvon has ac aid contact Gemini. Carnarvon has TM solid Gemini. All systems go.

HOU Roger,Carnarvon.

CRO 10, Carnarvon, standing by. Check your DCS circuit breaker. Thank you.

S/C Roger, will do.

CRO Flight, Carnarvon.

HOU Go.

CRO Do you want us to send SPC disable?

HOU Stand by. Just leave it in able.

CRO Copy. All systems "GO" both vehicles.

HOU Roger, Carnarvon.

END OF TAPE

CRO Agena LOS. All systems go.

HOU FLIGHT Would you send us an LOS main on Agena please, Carnarvon?

CRO Have you got it?

HOU FLIGHT Roger.

CRO Carnarvon has TM 1 LOS. All systems go on the Gemini.

HOU FLIGHT Roger Carnarvon.

END OF TAPE

This is Gemini Control 50 hours 28 minutes into the flight. Our best estimate now is the crew will perform at 51 hours 38 minutes, a fairly large burn which will take them down and leave them with approximately 12 pounds of propellant onboard, and then they'll perform a second burn, a very small order of burn at 53 hours 11 minutes into the flight. And the resulting orbit should be 158 by 216 nautical miles; 158 by 216 nautical miles after the two burns. We have some figures here from our electrical environmental control Communications Officer on the hatch closing and repressurizing time, the cabin was depressurized, at 48 hours 40 minutes into the flight. The hatch was open and Collins was reported leaving the spacecraft at 48 hours 42 minutes elapsed time. We estimate that the hatch closed at 49 hours and 20 minutes, approximation. We do know that the cabin was repressurized at 49 hours 22 minutes. The spacecraft is just skirting the edge of CSQ acquisition area, apparently we will have contact. Our next should come over Hawaii, and according to the flight plan, the crew will depressurize the spacecraft just west of Hawaii, we're due to acquire Hawaii at 50 hours 40 minutes, 10 minutes from now. Then a period of 15 minutes is allotted for them to jettison the equipment that they do not want to bring back in with them. The hatch has been closed over the Guaymas area. They will follow approximately a 35 to 40 minute EVA clean-up period, cleaning up the cockpit. They will then go through a platform alinement, and leading up to the period of the first burn at 51 hours 38 minutes. Following that first burn they are planning to do a D-10 experiment.

And that is the extend of our flight plan right now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, Houston. Fifty hours, 40 minutes into the flight and just as we started talking Hawaii reported they had a track on both vehicles, the Agena 8 and the Gemini 10. They are tracking the Agena 8 as they have in earlier passes with an S-band beacon announcing the signal off it. We have no voice communication yet via Hawaii with the crew. They're right on the flight plan. They will have depressurized the spacecraft by now and may have already have opened the hatch, we just don't know. This is Gemini Control, Houston. We've just tagged up with the crew and the characteristic of this crew throughout the flight. The first report from John Young was that they had already opened the hatch, jettisoned their equipment had closed the hatch back up and were repressurizing the cabin. Here's how the conversation is going over Hawaii.

HAW ....I haven't locked up solid yet. TM solid, Hawaii. Gemini 10, Hawaii, Cap Com.

S/C 10 go.

HAW Okay. How are you doing?

S/CC We're back up to cabin release pressure and we should quit open the reprints, Tom.

HAW Okay. Are you ready to start to go down for jettison?

S/C We've already jettisoned, Babe, we've opened the hatch, jettisoned everything and the cabin pressure is back up again.

HAW You're a little too swift for me. Your cabin's holding real fine.

S/C Rog.

HAW You look like you're pretty well squared away. You're

HAW showing about 900 on your cryo 2 which is real fine. Tubes look good and your cabin's good.

S/C Okay, thank you. You sound good.

HOU Hawaii.

HAW Go ahead.

Go ahead.

S/C He's too fast for us. Will that burn now be with the aft firing thrusters or the forward thrusters? Over.

HAW Aft. Aft firing thrusters.

Did you get that?

S/C Roger.

HAW We'll go bef now.

HAW Okay. I'm showing you. You've got your OAMS power control switch off haven't you?

S/C Yes Sir.

HAW Okay.

HOU Cap Com.

HAW Go flight.

HOU Ask him if he jettisoned everything according to schedule.

HAW Okay. Want to get the weight, huh?

HOU Rog.

HAW 10, Hawaii.

S/C 10, go.

HAW Okay. You've picked up the S-10 and did you jettison everything according to schedule or did you let something else go or did you keep something extra?

S/C No; the only thing we kept that wasn't on the list was

S/C the, was the EVA camera bracket which is down in the lower left food box.

HAW Okay.

S/C We have a fairing off with the S-10 too.

HAW Roger.

HAW Okay, that should give them a good hack on your weight.

S/C We have the Agena now. We're almost bef and it's about I estimate three thousand feet. In sunlight that's beautiful.

HAW Roger.

S/C If Houston wants to really close check on our reentry and weight they might give us a call later and check the individual items, the heavy ones if they are in doubt about that.

HAW Alright. Might just do that.
Close your circuit breaker or power control switch huh?

S/C Rog.

HAW Affirm.

Flight, did you copy all that.

HOU Yes, I understand he's turned bef and the Agena is behind him.

HAW That's what it sounds like.

Sounds like he's in real good spirits.

HOU Hawaii, from flight.

HAW Flight, Hawaii, Cap Com.

HOU Did you ask to comment on the stability of the 8 Agena prior...

HAW Flight, Hawaii.

HOU Go Hawaii.

HAW Did you get what he said there about the check list about items if you want to get a real good hack on the weight?

HOU Rog. We'll pick that up over here.

... Do you have data on these marks?

HOU Standby one. Say again Sam.

... Roger. Could you update us on these marks?

HOU We've got that here at the stateside.

HAW We'll get that for you over the states. They're making them up now.

S/C Roger. I was just wondering if we need a platform alignment before we get to the states?

HOU Tell them the burn is at about 51 plus 39.

S/C Okay. Do we need a platform alignment.

HOU Okay give you GEG time hack if you want it.

S/C Roger.

HOU Okay set up 5 0, 4 8, you got about 15 seconds.

S/C I'll never make it.

HOU Okay make it 5 0, 4 9.

HOU You want a platform alignment on that burn Flight?

M/C Stand by 1.

Hawaii to Flight.

HAW Go ahead.

M/C Would you ask him if the Agena is above them or below them, or about the same altitude.

HAW Roger, will do.

Is the Agena above you, below you, or about the same altitude?

S/C It's above us.

HAW Okay. Time hack in about 15 seconds.

4, 3, 2, 1, mark.

Did you get that time hack?

S/C No we missed it.

HAW Okay set up 50, 5 0, 00.

I'm having ~~tan~~ trouble on TM with Gemini, I've got good solid Cap Com.

TM Low limit on George Charlie 0 1.

---- Say again Flight.

---- That was .8, .8 4.

---- Okay I sent you a TX.

---- We got it.

END OF TAPE

HOU Hawaii, you were saying something to me?

HAW Flight, Hawaii.

HOU Go ahead.

HAW O.K., I was a little busy, I couldn't hear you,I was having trouble... My TM went off and I was trying to make sure that I got the dump off and that is why I didn't answer you. What were you saying?

HOU Yes,

HAW You forgot too?

TEX California go remote.

CAL Californis remote.

This is Gemini Control Houston, during much of the Hawaii pass, our Flight Director was in conversation with Flight Dynamics, Officer Jerry Bostick. Asking that he look very carefully at the distance and how we're setting up for these burns to insure that we will get safely under the Agena-8. Flight Dynamics feels with Young's report that the Agena-8 is slightly above them and that we will have no problem at all. Some consideration has been given to a slight out-of-plane burn which will insure adequate seperation, but apparently the passage seperation distance would be quite adequate. California has been remoted, but we have had no voice contact here, yet. There goes Al Bean putting in the first call. Let's listen.

HOU Gemini 10, Houston.

S/C Gemini 10, go.

HOU Roger, we have a maneuver for you. One foot per second out-of-plane at 51 plus 16, to seperate you from the Agena that is presently above you,over.

S/C Do what now, Flight?

HOU Roger, we are going to give you seperation, a lateral seperation from the Agena for the burn that is going to take place at 51:38:51 and we are suggesting a one foot per second lateral burn at 51 plus 16, over.

S/C Roger, 51 plus 16, for what?

HOU Gemini 10, Houston. That time would be 51:16:00 and would be one foot per second to the south and do you think that would give you then lateral separation from the Agena?

S/C This is 10, I think we already got some. I think that the possibility of hitting it at this point of time is so remote at to be negligible. Would you give us a time hack on GET?

HOU Roger, it's about 29 seconds until 50:53..correction 50:54:00, give you a mark there.

S/C O.K. (garbled)

HOU Ten seconds.

S/C Listen Al, you have to to remember that it will be...

HOU (Garbled)

S/C ...and I was trying to hit it.

HOU You will set up on elapsed time 54:30, I will give you a hack there.

S/C (garbled)

HOU Roger, 5 seconds, 3, 2, 1, Mark. That was time 54 plus 30.

S/C Thank you, sir.

HOU Roger, we have a burn for you if you are ready to copy.

S/C Ready to copy.

HOU Roger, it will be an orbit shaping maneuver, GET of 51:38:51, 100.0 feet per second, burn time one plus 57, yaw 180, pitch zero, 25 is 91000, thrusters is aft, maneuvers retrograde.

S/C Roger, do you want this lateral seperation....(garbled)

HOU That is affirmed. one foot per second to the south at time 51:16:00.

S/C Roger.

HOU On this orbit shaping maneuver, at 51:38:51, the logic is to completely deplete your main OAMS tank only in this burn. We have scheduled you for 100 feet per second, but expect the OAMS regulator pressure will drop below 250 PSI, when you indicate only 75 feet per second or so, burn and this is the cutoff point into the burn. That is we want to completely deplete the OAMS tank and then will accept the feet per second that you occur during this.

S/C Roger.

HOU Roger, the maximum for this would be 100 if you could get there, but what ever number it is when the regulator pressure drops to 250, is what we will accept and then we will be standing by for your readings on 80, 81 and 82.

S/C Roger

HOU And are you satisfied with the time hack?

S/C Yes sir.

HOU Roger, did you get your yaw Gyro back on?

S/C Right, tell (garbled)

HOU Roger, then I guess at this point you are aligning

HOU your platform?

S/C Roger, I called MO and asked if he had our acquisition yet. We are on the line with their carrier, but they're not shipping up data yet.

HOU Rog, thanks.

S/C I can't get to them.

HOU Rog, we will stand by.

S/C Roger.

TEX Guaymas go remote, California local.

GYM Guaymas is remote.

CAL California local.

HOU Guaymas, we wanted an AOS main.

GYM That's great, but it is over Hawaii, they didn't give me any TM.

HOU How about that.

END OF TAPE

HOU/1 Go TM.

HOU/2 Roger. We finally got to Guaymas and it turns out that the Gemini telemetry is not turned on. They do not have acquisition.

HOU/1 Thank you.

HOU/3 I see. So it's the spacecraft problem.

HOU/1 That's what they are telling us, I didn't know it.

HOU/3 Okay.

HOU/1 Go ahead TM.

HOU/2 Roger. Guaymas says the telemetry is not on is that true.

We're buying that, we finally went to Guaymas to get the answer.

HOU Gemini 10, Houston.

S/C 10, go.

HOU I've got a short flight plan up-date for you.

S/C Roger. Wait a second.

HOU Houston to TM assistance.

TM Go ahead GMC.

GMC You getting the GMTIM?

TM We've got Agena.

GMC Roger. Thank you.

TM We now have Gemini also.

S/C Ready to copy.

10 is ready to copy.

HOU Roger, 5 1, 4 5, 0 0, it will be a D-10, load a

HOU and in this D-10, no maneuvering and if the horizon scanner ignora light will not bother you during the sleep period we'd like to have you leave that on. A 5 1, 4 5, 0 0, to 5 2, 4 5, 00, be an eat period. 5 2, 0 0, 0 0, at CSQ, purge fuel cells, 1 then 2. At 5 2, 5 0, 0 0, at RKV, we'll have a PLA up-date crew status report

GT LOS Grand Turk.

HOU Right now the second of the two burns looks like it will take place somewhere around 5 3, 1 1, 0 6. So we'll be sending you powered down spacecraft after that time, but we'll have more information on that later.

S/C Can't read at all.

HOU Roger. Right now it looks like the second orbit shaping maneuver will take place at 5 3, 1 1, 0 6. We'll then be sending you some information on spacecraft power down. But we'll have more of that later.

S/C Okay. Your radio is load and clear one minute and then you're gone the next. I copied down to 52, 00, and then I picked up again at 53, 11, and lost everything else.

HOU Gemini 10, Houston. Because of the communications right now, we'll contact you over another station and pass this information up then.

S/C That's a good idea.

HOU Roger.

HOU Houston TM, Agena systems.

---- Go ahead.

HOU Did you get a real noisy data.

--- That's affirmative.

HOU Roger.

HOU Houston TM electrical.

---- Go ahead electrical.

HOU Could I get a read out on CAO 9, cryo quantity, O 2.

---- Electrical we've got a BCM 109.

HOU 109 counts.

---- Roger.

HOU Houston TM Agena systems.

---- Go ahead Agena systems.

HOU Are you getting noisy TM from the Cape.

---- That is affirmative.

HOU We got a solid drop out now systems, we're standing by.

---- Houston TM are you in Grand Turk now?

HOU Negative we're GBI.
Grand Turk.
We just switch Antigua.

HOU Okay.

GBI LOS GBI.

HOU Agena systems your data should be good now, we're on Antigua.

---- Roger.

LOS, Grand Turk

END OF TAPE

GEMINI Control Houston here, 51 hours 14 minutes into the flight. The RKV is locked up on Gemini 10, and we are less than a 1 minute away from a 1 foot per second burn to the south to insure lateral separation from the Agena 8 as we go into this larger burn, about 15 minutes from now. So far in the pass we've only had an exchange of call signs, knowledgement and the RKV Flight Controller assured John Young that he was going all the ways, and he would stand by to monitor his burn. Five seconds away from the burn.. now we should get some discussions of the results, we'll tune in there.

RKV Change low limit CB01 to 5.10.

--- Okay that's CB01 to what.

RKV 5.1, upper 5.6.
Change the lower limit on CC01, and CC02 to 0, upper limit .25.

Thus far no conversation, we do have some other loops coming in on that same ...conference, but no contact with the spacecraft. Here we go.

S/C 1.3 feet per second south

RKV Roger understand 1.3 feet per second south.

RKV Okay we'd like to have some information on the, your rendezvous with 8, how close do you think you can maneuver your spacecraft to the 8 Agena?

S/C Oh a couple of inches.

RKV A couple of inches, Roger understand.
Okay I have the rest of this flight plan up-date for you, when you are ready to copy.

S/C Okay, what.

RKV Okay, we'll start out at 5 2, 0 0, 0 0, at the CSQ. Burn fuel cells, 1 then 2. Cryo quantity read out. At 5 2, 5 0, 0 0, at the RKV. TOA up-date. Crew status report, at 5 3, 1 1, 0 0, second orbit shape. Do you copy?

S/C All you have to do is say flight plan up-date and the radio goes out, let's give it one more try.

RKV Okay, what is the last item you have?

S/C Let me read back to you what exactly I have and then you can fill me in. I've got 51, 45, 00.....no maneuvering, the horizon scanner ignora leave on all night, 51, 45, 52, 45, 52 hours even on the CSQ, purge one and two, cryo quantity read out, 55 00 00, PLA up-date, and 53 11 06 and orbit tweak maneuvers.

RKV Okay that PLA up-date over the RKV is at 5 2, 5 0, 0 0.

S/C Got you, 5 2, 5 0, 0 0,

RKV And your last item is 5 3, 11, 0 0, second orbit shape, and that is it.

S/C 5 3, 1 1, 0 0, orbit tweak. Thank you.

RKV Roger.

Still looking good here on the ground, standby.

RKV Flight, RKV.

M/C Go RKV.

RKV Okay he completed his burn and is 1.3 feet south.

M/C Copy.

RKV And he said he came within a couple of inches of Agena 8.

M/C Copy.

TM Okay we have sent command 6 to the Agena TM off.

M/C Roger.

This is Gemini Control 51 hours 24 minutes, that wraps up the communications for this pass. We heard Young say during the pass when asked how close he got close to the Agena 8 his reply was, "oh several inches".. This is as close or perhaps closer than even Gemini 6 got to Gemini 7. I think our best estimate there was 11 and 12 inches. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 51 hours, 36 minutes into the flight. According to our acquisition schedule Tananarive should be within acquisition within some 20 seconds. No contact since our last communication over RKV. Very little activity here in the Control Center. Tananarive has been remoted. I think CC Williams is going to put in a call now.

HOU Gemini 10, Houston Cap Com. Standing by for your burn.

S/C Roger, you said we probably had some ..... so we switched over to UHF number two.

HOU Roger, I'm reading you loud and clear.

S/C We're reading you loud and clear too, CC.

HOU Rog.

S/C This is Gemini 10, do you read me now on UHF number one?

HOU Gemini 10, Houston Cap Com, I read you loud and clear on UHF one.

S/C Roger, we read you the same.

S/C Houston, this is Gemini 10.

HOU Go ahead, Gemini 10.

S/C Roger, we burned a 100 feet per second and we still got fuel.

HOU Roger, understand you burned 100 feet per second and you still got fuel?

S/C Roger, that is.....(garbled)...got zero.

HOU Gemini 10, say again, you are unreadable that time.

S/C ...the residules on that burn 80 was 4005, 3027, 82

S/C 3020, and we are trying to settle with this C.C. the propellant quanity now indicating our resource pressure is steady on 300 PSI, correction our regulated pressure.

HOU Roger.

S/C And our source pressure is about 70 PSI.

HOU Roger. Gemini 10, Houston.

S/C Gemini 10, go.

HOU Roger, we are going to take a look at you over the CSQ. We may not have to make another burn tonight, John and you can go to bed early. What are you going to do with all the room in the spacecraft?

S/C Well, I'll tell you, it seems like it is bigger than a too-room apartment now compared to what it was about an hour and a half ago.

HOU Rog.

S/C Add steaks to those cakes.

HOU We have got about one minute to LOS and standing by.

S/C Roger, say about the two other things that we didn't want to let go of like the hassel blad EVA camera when the lanyards went.

HOU Roger, understand.

S/C Another small item we lost was the flight plan out the window, so you might bear that in mind in the rest of your planning and keep us abreast of what is going on and we've got that abbreviated copy of the flight plan C.C., that I copied down in the back of my rendezvous book, but that is all.

HOU O.K, well we'll update you over CSQ.

S/C I'm sorry, we got all the other publications, we have got the ...book and assistance book with us.

END OF TAPE

This is Gemini Control Houston 51 hours 47 minutes and you can imagine how the statement that we lost our flight plan was received here. I think everybody got the best laugh out of the mission from that. There are no majors items, there are the fuel cell purge planned a little later this evening. The burns of course can be done by a simple time notation. The crew did have difficulty have EVA today with their elapsed time clock onboard. They also had trouble with clock yesterday following their EVA. Apparently the cause in both cases was the inadvertly dropping off of the circuit breaker, it's required several resets after Collins returned to the spacecraft on both occasions. The Flight Director based on the information John Young passed on to us on a 100 foot per second burn, he says now his OAMS tank is reading 0, that might be a pound or less than a pound remaining. The feeling is now that the,...we may not need a second burn, two had been planned this evening. This second burn is still under consideration, but the trend is now is just eliminate the need for it. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 52 hours even into the flight. The CSQ has just picked up the solid telemetry signal and should be talking with the crew in a very few seconds. We'll switch now and monior that.

S/C Go

CSQ Roger. You're looking real good here on the ground. We're ready for your fuel cell purge section 1 then 2 any time your ready.

S/C We are now purging the hydrogen and oxygen on section 1 and oxygen in section 2 is in progress.

CSQ Okay.
Are you purging at this time?

S/C That's right, we're purging now.

CSQ Okay fine, we don't see it on the ground.

AFD CSQ, AFD.

CSQ AFD, CSQ.

AFD We'd like you to interrogate the VM.....summary.

CSQ Say again.

AFD Interrogate the VM and then send the Charlie summary.

CSQ Say again, I can not copy.

AFD What we would like you to do is follow the ....interrogate the VM, and then send a continous Charlie, on the Agena.

CSQ Interrogate VM, then continous Charlie.

AFD That's right.

CSQ We have already done that.

CSQ TM, CSQ.

We just completed purge, let me know so we can get cryo read outs.

TM Roger. We will.

---- CSQ would you interrogate again please, send another Charlie.

CSQ Will do.

S/C Purge is completed.

CSQ Roger.

---- Computer TM, Agena command.

TM Go ahead Agena command.

AC Could you raise the upper limit on H057 please?

TM Roger.

AC To 28.8.

TM Roger.

AC Computer TM, Agena command.

TM Go ahead.

AC Could you lower the limit on H062 to 40 degrees please.

TM H062 to 40 degrees.

HOU CSQ, Houston Flight.

CSQ Houston, CSQ.

HOU Could you send us a couple more Gemini mains please.

CSQ Gemini mains, Roger.

S/C CSQ, Gemini 10.

CSQ Gemini 10, CSQ.

S/C That eye problem, or whatever that problem was is a lot better since EVA. It's not noticeable, our eyes have cleared up.

CSQ What problem is that?

S/C Those fumes we had....

CSQ Okay we understand thank you.

S/C We're still on suit band number 1 and intend to stay on it.

CSQ Okay.
How's your purge going?

S/C I guess you must not be reading me, I called you when I turned the cross over valve off, I completed it about 2 or 3 minutes ago.

CSQ Okay. I read your transmissions about that time, but it was a little garbled. Could you put quantity read to cryo 2?

S/C Cryo to quantity 2.

CSQ H2.....could you go back to O2 for a minute please.

S/C Reads about 40 percent and about 7 30 on pressure.

CSQ Roger.
Okay you can place it back to the off position.

---- LOS Gemini and Agena.

END OF TAPE

This is Gemini Control Houston, 52 hours, 18 minutes into the flight. Our last data on the remaining OAMS fuel aboard the spacecraft indicates we're..we have got about 20 pounds, give or take a few pounds either way the chart varies from station to station, a few pounds each way. About 20 pounds of usable propellant remaining these..oxidizer and fuel in the two auxiliary tanks, the main tanks, the supply in the main tanks has been depleted by the 100 foot per second burn a little while ago. This is more than enough to set up for the retrofire in the morning. The flight plan shows that we will power down a little bit early tonight. The crew is to go to bed at an elapsed time of 53 hours, a little less than an hour now. The crew is having their final meal of the day right now. They will be powering down the spacecraft as they reach the eastern Pacific area in about 15 minutes from now. A little later, over the Rose Knot Victor, they will get the final update of the evening on plan landing areas collaterial kind of information will be passed up also they will get a crew status report for the day over the Rose Knot Victor. Our present orbital parameters on the Gemini 10 are 215.9 nautical miles by 158 nautical miles, while we've been talking Hawaii has acquired and we'll play this conversation for you now.

HAW O.K., you can put the TM control switch to real time ac aid position.

S/C It is in it.

HAW O.K., why don't you leave it this way for the rest of the night and your adapter C-bands to the continuous position.

S/C O.K. and C-band to command.

HAW O.K. All right I have got some questions that I want to ask you, we will lead you through a check list on the jettision to see if we get everything you have got.

S/C O.K.

HAW O.K., I want to know if the jettisions are following that of the umbillical bag?

S/C The umbilical, yes, if it is the great big bag, yes.

HAW O.K, the HFMU...HHMU/

S/C It is gone.

HAW The ELSS? Strap?

S/C They are gone.

HAW The 18 to 24 stand up hoses?

S/C They are gone.

HAW Both Y connectors?

S/C They are gone.

HAW Suit hose interconnect?

S/C Yes, they are gone.

HAW The EVA visor?

S/C Gone.

HAW The EVA CB and light assemble.

S/C Yes, that's gone.

HAW The dry waste container.

S/C Yes, there are a couple of those.

HAW The velcros straps?

S/C Yes, that is gone.

HAW The glare shield?

S/C Gone.

HAW The ELSS?

S/C Gone.

HAW The 50 foot umbilical?

S/C Gone, thank God.

HAW And the N-1230?

S/C The S-1230 from the Gemini -8 Agena, we have with us is the S-1230 from our on spacecraft, we threw away.

S/C Correction, I'm sorry the S-12, we jettisioned, the S-10, from the old Agena we have with us.

HAW O.K., now what else did you throw away? Besides the flight plan?

S/C Oh, we threw away the S-13 bracket, but I think you have got those items before on the EVA, S-13 brackets the MSC/ color / plate and extension rod.

HAW O.K., the MSC color / plate and extension rod? And the Hasselblad is gone?

S/C Yes, we didn't exactly throw it away, but it is gone.

HAW Maybe it will take a picture of itself, any thing else?

S/C Yes, we had / S-12 in the cockpit and when..we can't find it now, so we either stowed it in some magic place or else it has floated back out somewhere in the EVA sequence and we'll let you know if we find it, but if we don't find it or don't tell you, you had better sound out that it is gone also. The S-12 back in the cell.

HAW O.K., anything else.

S/C Negative, everything else is straight forward.

HAW O.K., thank you. Flight, Hawaii.

HOU Go ahead.

HAW O.K., this VM test is not working right, what we would like to do is to send VM disable and get a VM readout, then VM enable.

HOU Yes, Mel wants a Charlie after the interrogating before the enable.

S/C We are taking inventory now of how much film we have got left. When we gettit all added up we'll give you a rough hack on it for your S-5, S-6 noting planning.

HAW O.K.

HAW The jettision must have been a real ball.

S/C Yes, it was real good to get rid of all that junk. Our biggest problem was to how to put it so we could get rid of it, but the bag was as big as one body.

HAW Right.

S/C I decided not to use the stand up poses, so I was just on the spacecraft poses without any extension what I did was get my body positioned down in the bay and footwell prior to pressurizing the suits so that when I pressurized the suit, I was wedged in down there with enough head clearance so that it was a simple matter to get the hatch closed again. For the final burn.

HAW Oh, you had the hatch open three times in the past

HAW few days with no real problems, that is real good.

S/C That hasn't happened before?

S/C Yes, we would like to try for five before the water.

HAW We'll see what we can do here tomorrow morning.

HAW O.K. the words is to rest and no more thank you.

S/C Thank you,

HOU Hawaii, a couple of more of Gemini mains please.

HAW Roger. VM enables readouts are now working. We have got some Charlies on the way to you. Looks like you are pretty well squared away your Gyros two is in a good point and reads about 910 on the ground which is real fine.

HOU Hawaii, Flight.

HAW Go Flight.

HOU Can you estimate how many pounds were in the two dry waste bags?

HAW In the what?

HOU About how many pounds in those two dry waste bags that you threw away?

S/C There probably weren't too much weight in them((garbled) ...they were actually...fractions... packages, you know the packages that the food comes in.

HAW O.k.

HOU O.K. Roger.

S/C Packages that the first meals...multiplied by two and add the weight of the dry waste storage bag and that will give it to you.

HAW O.K. all right. S-band LOS, everything LOS except

HAW Agena telemetry.

END OF TAPE

This is Gemini Control Houston 52 hours, 29 minutes. Flight Director Glen Lunney has just directed our Capsule Communicator, Al Bean to call the crew again via California and review several other items with the crew. He also suggested that the..that Bean tell the crew that it has been a great day at ..and to congradulate them on their work. The telemetry readings on our OAMS system are still being watched here at the last reading we have an indication that we may be a little fuel poor as Lunney put it. Our last readout shows 7 pounds of fuel and 16 pounds of oxidizer. So, we are fuel poor oxidizer rich. We certainly have more than enough to line up for the take in the morning. Now we are in contact with the two now. Let's listen in.

HOU Gemini 10, Houston.

GYM Guaymas has Gemini TM solid.

HOU Gemini 10, Houston. Gemini 10, Houston.

TEX Guaymas go remote. California go local.

GYM Guaymas remote.

CAL California local.

HOU Gemini 10, Houston.

S/C This is 10, go ahead.

HOU Roger, got a couple of items for you here. Your orbit now is 216 by 158, looks real good for tomorrow. Looking at it on the ground here, looks like you may be fairly low on fuel even though you have got a full volkswagen oxidizer tank, so we expect you to keep a close watch on that one.

S/C We promise not to use any more of it.

HOU Roger. We would like you to put the antenna select

HOU to reentry for the night operations, when you get ready to go to bed.

S/C Roger.

HOU Right, in fact you can do that right now, if you would like to.

S/C Roger. Now.

HOU Roger, I've got a short flight plan update for you here, are you ready to copy?

S/C Go ahead.

HOU Roger it is 53:00:00 to 63:00:00 is sleep period. Now during this time, we would like for you to do D-10 mode G, and as we mentioned earlier if the scanner ignore light doesn't bother you while you sleep, we would like to have you leave the scanner on at night because it helps us corrlate some of the drifting flight data that they get. If it does you might try...

S/C ....a bet..say again the mode number G ...George.

HOU That's affirmative. Also we would like for you to leave the scanners on during this period so that we can corrolate some/of the data better.

S/C O.K., I got that, corrlate some of the data better, I didn't hear you say anything else, say again.

HOU Roger, you copied corrlate some of the data better and the suggestion was to leave your scanners on during the night sleep period.

S/C O.K., I got that, I'd say something in between there excuse me..

HOU Roger, we are about one minute to LOS here we will pass you some more information over RKV, but we wanted to let you know that we are pretty doggone happy down here, it has been a great day today and we are just feel about as happy about it as you do I guess.

S/C Yes, we feel like it is going just great and we would like to keep it that way.

HOU Yes, I think it will be. We are all pretty happy about it , the way everything went.

S/C Well, we got a lot of film left for your planning purposes in M-5 S-6, we have got about six magazines of 16 mm color and two magazines of black and white and we have got about two and a half of mags of 70 mm mallon left.

HOU Roger, we copy, we will be thinking about that tonight. Since we are just about LOS, once again it was a great job today, it was fabulous.

S/C I tell you it was a tremendous thrill, it was really incredible, I can't believe part of it myself. I hope these pictures come out.

END OF TAPE

This is Gemini Control Houston 52 hours 51 minutes into the flight. The RKV should acquire momentarily. Al Bean has some additional items to take up with the crew. It's not clear where we'll remote through RKV or whether the RKV Cap will handle it but in either way there will be discussions. So we'll stand by and wait for the start of it.

---- If you ready I'll give you the headings on the columns as I relay them.

S/C I'm ready.

RKV Oh great, area 35-3,

S/C Standby 1.

RKV Roger.

S/C Okay, ready to copy.

RKV Okay, area 35-3, 5 6, 2 9, 4 4, 2 1, 4 7. 2 7, + 05, weather good. Area 3 6-3, 5 8, 0 5, 4 9, 2 1, + 1 2, 2 7 + 01, area 3 7 Delta. 5 8, 5 5 1 9, 3 0, + 1 2, 3 5 + 3 2, weather good. I believe I forgot to give you the weather in 36-3, the weather is marginal. Area 3 8-2, 6 0, 3 3, 5 6, 2 8 + 2 9, 3 3 + 0 6, weather marginal. Area 3 9-2, 6 2, 1 3, 0 1, 2 6, + 3 6, 2 8 + 4 7. Weather is good. Area 4 0-2, 6 3, 5 2, 4 8, 2 4 + 3 7, 2 9 + 2 4, weather good. Area 4 1-1, 6 5, 1 7, 4 7. 2 6 + 08, 3 1 + 0 1. weather good. Bank in both for all areas, roll left, 9 0. No set maneuvers required. Did you copy?

S/C Roger. Repeat 35-34 for us again, please.

RKV Area 35-3, at 5 6, 2 9, 4 4. 2 1 + 4 7, 2 7 + 05,

RKV weather good.

Did you copy.

S/C Roger, copied.

RKV Roger. Like to have your crew status report.

S/C Crew status is go.

RKV Roger.

S/C (garbled)

RKV Say again 10.

S/C 804 on the counter.

RKV That's 8 zero 4 on the counter.

S/C Program. CM2 missed once today. That's the only meal we missed so far.

RKV Roger.

RKV Okay I guess this will be our last wake pass with you, so you can power down your spacecraft and get ready for your sleep period. And we'll be watching you while you're sleeping and we'll see you back on the ranch.

S/C (garbled)

RKV Say again.

S/C Said just because he missed it don't think he's not going to make up for it.

RKV Okay.

S/C Do you want us to stayed powered up a while longer or should we power down, should we leave the platform on, would it help out to leave the

S/C platform on for TPM?

RKV You can power down if your preference as for as I know. Standby. I'll check.

You want them to leave the platform powered up?

M/C Negative. Power it down.

RKV Houston wants you to power down as far as they are concerned.

S/C Okay and we'll leave the scanner on primary.

HOU And leave the pump on primary a, secondary bravo.

RKV That's what they are in right now.

HOU Okay.

Leave your pump configuration in the present condition.

RKV Flight, RKV.

M/C Go ahead.

RKV Okay hotel, 049, S-band corresponder is reading 0 percent, PSS., which is equal to about minus 68 degrees. Do you want us to turn it on?

M/C Negative.

RKV Roger.

M/C RKV, Flight.

RKV Flight, RKV.

M/C When that transponder is down there is no actutation for the transducer.

RKV Roger.

This is Gemini Control Houston, at 53 hours and 1 minute into the flight, and that pretty well wraps up our communications for today. No further communication planned this evening. In the course of that last conversation you heard Mike Collins who identified himself as CM2, or crew member 2. He reported that he missed lunch today. John Young /reminded everybody immediately that Mike was making up for it this evening. They are apparently eating their evening meal during that pass. We close them to power down for the night, they are going to leave on the D-10 ion boom sensing experiment on over-night, no attitude required, in drifting flight throughout the night. We have allotted 10 hours for the rest period tonight. And our reports from the control center will now /revert to 1 report per hour at 50 minutes after the hour. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control, 53 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 is at the present time over the Indian Ocean and will cross the lower part of the Asian continent across approximately Indo...of what used to be French Indo China, now Viet Nam. On its 33th revolution, the crew of Gemini 10 has settled down for ten hours of sleep and are due to be wakened at 63 hours ground elapsed time. The next station which will do ground read-outs of the onbeard spacecraft telemetry will be the tracking ship Coastal Sentry, at approximately six minutes from this time. At 53 hours, 30 minutes and 20 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 54 hours, 49 minutes and 38 seconds after liftoff. Gemini 10 at the present time is in its early part of its 34th revolution over the other part of the African continent. Toward the mid-point of the 33rd revolution over Hawaii, the spacecraft communicator at Hawaii commanded a tape dump from the Gemini 10 spacecraft and also commanded the Agena 10 status display panel to bright and turned on the L-band transponder aboard the Gemini and as you were, the Agena 10 spacecraft. Spacecraft Gemini 10 was "GO" on the ground at Hawaii. During the pass over the tracking ship Rose Knot, beginning in the 34th revolution, the Gemini spacecraft was go on the ground and it was affirmed with the crew apparently who is not asleep yet, that the horizon scanners were on, as requested earlier. The orbital elements of Gemini 10 now stand at 216.1 nautical miles, the apogee by 158.3 nautical miles perigee. We have a brief tape recording of the exchanged conversation between the spacecraft communicator on the RKV and the crew of Gemini 10, let's hear that tape now.

RKV RKV has ac aid contact, its ....is real ragged.

HOU Roger.

RKV RKV has TM solid Agena and meet them with "GO" .

HOU Roger.

RKV RKV TM solid Gemini, vehicle is "GO".

HOU Roger, Gemini TM.

RKV Command 12VRT. reset is sent.

HOU Right, command 12 is sent.

RKV Say again AFD

HOU I said roger.

RKV Charlie Delta-01, fuel cell just rolled out outlet temperature primary is reading 69.6.

HOU Roger, we copy.

S/C This is Gemini 10, over.

RKV Gemini 10, RKV, can I help you?

S/C Roger, what is our present position right now?

RKV Well you are somewhere over us at this time, stand by and we'll give you...

HOU He is about 40 degrees west,

RKV Say again.

HOU Longtitude is about 40 degrees west.

RKV Roger, your longtitude is about 40 degrees west and about 25 degrees south, [illegible] around

S/C Roger, could we get a flight plan update for our rev. chart.

RKV Roger, stand by.

S/C You have got us on this ....schedule and it is not our bed time yet.

RKV Gemini 10, you are breaking up. Can you read me please?

S/C Roger, just requested a flight plan up date...a trajectory update.

RKV Roger, I'll get one for you. Stand by. He would like to have a trajectory update please.

HOU What does he mean by trajectory update, his orbit is 158 by 216.

RKV O.K., well I think he is asking for is a node.

HOU O.K. Try one.

RKV Gemini 10, RKV, they are working on a nodle update your present orbit is 158 by 216.

S/C Roger.

RKV As soon as they give me the node, I'll have them to you.

S/C Roger.

HOU RKV, AFD.

RKV Go, AFD.

HOU O.K., the time is 54:59, rev 34, 53.7 degrees east four hours and four minutes right Ascension. Correction four hour and 48 minutes right Ascension.

RKV Say again, repeat the entire node.

HOU The time is 54:59, rev. 34, 53.7 degrees east four hours and 40 minutes right Ascension.

RKV Roger, understand. 10, RKV, I have your node.

S/C Roger, go ahead.

RKV It is 54:59 hours, rev. 34, 53.7 degrees east four hours and 48 minutes, that is four hours 4 8 minutes right Ascension.

S/C Roger, thank you very much.

HOU RKV, AFD.

RKV Go AFD.

HOU O.K., you might ask him if he is going to leave his scanners on tonight.

RKV Roger. 10, are you going to leave your scanners on this evening or off?

S/C We are leaving our scanners on.

RKV Roger. We show your scanners as being off here, Gemini. We've had LOS on the Gemini. He said h horizon scanners were on, we show them as being off.

HOU Yes, we copied that.

RKV We have LOS both vehicles.

HOU Right.

END OF TAPE

This is Gemini Control, 55 hours 29 minutes and 38 seconds after liftoff. Gemini 10 is within about two minutes from being acquired by the Hawaii tracking station and this will be a silient pass which there will be a tape dump telemetry data. Earlier in this 34th revolution, the spacecraft made another silient pass over the tracking ship Coastal Sentry. The spacecraft communicator commented that the spacecraft looked real good from his stand point, but that looks like the crew was still awake at that time. There was a certain amount of kidding from the Flight Controllers here in Mission Control about the, whether the Coastal Sentry were anchored about or near a bell-boy. There seems to be some sort of gong sound on the radio length from the ship. It was apparent last night also during the conversations with the Coastal Sentry. The spacecraft communicator reported that the Command Pilot's heart rate was running from 70 to 80, while the Pilot's rates were running from 60 to 70. At 55 hours, 30 minutes and 50 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control, 56 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 at the present time is over centeral Africa and in the early part of the 35th revolution. At the beginning of this revolution, there was a silent pass over the tracking ship Rose Knot, where the spacecraft and the Agena 10 were go on the ground. Assistand Flight Director on the Orange team here in Mission Control asked the spacecraft communicator aboard the Rose Knot how things were going out there. The reply was," We're bobbing around a little bit, but not too much".. he also commented that the crew of Gemini 10 appeared to be asleep at this time. According to the biomedical telemetry readouts. At 56 hours, 30 minutes and 32 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control 57 hours, 29 minutes, and 38 seconds after liftoff. Gemini 10 is presently over the Pacific and will be acquired in 13 minutes by the tracking ship Rose Knot. Earlier in this revolution during the pass over the tracking ship Coastal Sentry the Mission Control people here commented that they could'nt hear the gong sound they had heard earlier, on this pass CSQ Communicator said he was hearing it now. He also mentioned the spacecrafft was looking good, the crew was probably asleep. The next three or four revolutions ll be covered only by the tracking ships, coastal sentry and Rose Knot. There will be no passes over land, command stations. At 57 hours, 30 minutes, 34 seconds after liftoff; this is Gemini Control.

END OF TAPE

This is Gemini Control at 58 hours, 29 minutes and 38 seconds after liftoff. Gemini 10 is presently over the tracking ship Coastal Sentry just south of Japan, and a few moments ago the spacecraft communicator said the spacecraft was looking good. Earlier in this revolution, the spacecraft communicator aboard the tracking ship Rose Knot gave the Gemini 10 and the Agena both a go. Weather is expected to be excellent in the prime recovery area in the western Atlantic for this afternoon's landing of Gemini 10. Mission Control Center's early morning edition of the -- news briefs called the Orange Bugle/Roundup has just been teletyped out to the tracking stations to keep the flight controllers out there abreast of what's going on in the rest of the world. At 58 hours, 30 minutes and 34 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 59 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is over the south Atlantic, just about to leave the acquisition range of the tracking ship Rose Knot. The spacecraft according to the ground readouts of telemetry was go, at the Rose Knot. The next station to acquire will be the CSQ or Coastal Sentry off the coast of Japan, and probably 35 minutes from now. We're getting on the so-called back side of the orbits now where the station passes or few and far between. At 59 hours 30 minutes and 21 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control 60 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is over the south central Pacific nearing the end of the 37th revolution. A few minutes ago, they passed over the tracking ship Coastal Sentry, where again as usual, is go on the ground. Flight plan up-date has been sent out to the remote sights from mission control here. It starts with the crew waking up at 62 hours 45 minutes elapsed time, that's about 2 hours and 15 minutes from now. This is over the Canary Island station, and there will be at that time a short flight plan up-date relayed to the crew, at 63 hours ground elapsed time, they will power up the platform and conduct a purge of the fuel cells. From 63 hours through 64 hours ground elapsed time there is scheduled an eat period. From 64 05 through 64 40, there's the first of several runs of the D-10, iron sensing attitude control, experiment. In this case it will be the yaw attitude mode. At 64 hours 10 minutes mission control center here in Houston will pass up to the crew a flight plan up-date. At 64 hours 22 minutes Canary Islands will pass up a plan landing area block up-date, and also will receive from the crew a status report of their food and water intake and so-forth. From 64 hours 46 minutes which will be sun rise, through 65 hours 23 minutes, they will conduct a run of the D-5 star occultation experiment. At 65 hours 25 minutes to 65 hours 55 minutes, another run of the D-10 ion sensing attitude control experiment will be run, this time in the yaw attitude mode. From 65 hours 55 minutes, to 66 hours 10 minutes they have another run of D-10, this time in the roll attitude mode, following that from 66 10 to 66 40 a

run of D-10 in the pitch attitude mode will be run. 66 40 to 67 25 ground elapsed time, there is scheduled a period of stowage of all loose equipment in the cockpit, preparation for reentry. At 67 hours 20 minutes ground elapsed time, Mission Control will pass up to the crew reentry up-dates for the planned landing area in 44-1, also at that time they will purge the fuel cells. From 67 hours 25 minutes to 68 hours 10 minutes there in scheduled an eat period. From the end of the eat period at 68 hours 10 minutes ground elapsed time to time of retro-fire, time is set aside for retro-fire preparation, in which the crew will go through their pre-retro check list make sure everything is properly stowed etc. At 68 hours 55 minutes Mission Control Center will again pass up to the crew the latest figures for reentry. At 60 hours 33 minutes 26 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control 61 hours 29 minutes and 38 seconds after lift-off. Gemini 10 is mid-way through the 38th revolution over the Central Asian Continent. They have had a silent pass over the Rose Knot tracking ship off the coast of South America. At that time the spacecraft communicator advised Mission Control here in Houston that the spacecraft was go on the ground. Earlier in the flight plan up-date it was reported that at 64 hours 46 minutes ground elapsed time there was to be a D-5 star occultation experiment conducted, and it was also said that this was sun rise... at time of 64 46 was sun rise. This has been amended, or corrected I should say, that should be sun set rather than sun rise. The crew has about another hour and 15 minutes to sleep, before they either wake up themselves or they are called on the radio from one of the ground stations. At 61 hours and 30 minutes and 43 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control at 62 hours 42 minutes into the flight. Gemini 10 has just started its 39th revolution a few minutes ago. It is now about midway across the Atlantic. The crew is still asleep, we'll put a call into them over the Canary station in about three or four minutes. A Flight Surgeon, Dr. Fred Kelley, reports that the crew's heart rate during this sleep period have been in the vicinity of 50 beats a minute. Pilot Mike Collins running down below 50 in the 40's most of the time. Command Pilot John Young just a little higher then that, slightly above 50. The 10 Agena is trailing the spacecraft by about 1200 miles. The 8 Agena trailing the spacecraft by about 1400 miles. We'll standby and we'll bring you the Canary pass as they awaken them. This is Gemini Control.

END OF TAPE

Here's the Canary Cap Com putting in a call to the spacecraft now.

The Canary Cap Com is putting in a call to the spacecraft now, let's stand by.

CYI Gemini 10, Canary Cap Com

S/C Canary, this is Gemini 10, how do you read. Over.

CYI Read you loud and clear. Good morning.

S/C Good morning.

CYI How are you all feeling this morning?

S/C Great.

CYI Real good. Could I have you move your quantity switch to the O_2 position for us please.

S/C Roger, O_2.

CYI Roger. I've got a small flight plan update for you when you're ready to copy, when you get your eyes open.

CYI Gemini 10, Canary Cap Com. Would you move your quantity switch to the H_2 position?
Thank you.

S/C Roger and ready to copy your update.

CYI OK. At 63 hours call up platform, purge fuel cells section two then section one. Load module 6 for D-5 orbit determination. Align the platform as soon as warmup is complete, then platform SEF. From 63:00 to 64:00 eat period. From 64:05 to 64:40 D-10 mode easy. That's all I'm going to give you. If they have some more they'll update you later on.

S/C Roger, thank you.

CYI You're looking real good down here on the ground.

S/C Roger, we're coming up over the African coastline right now. We can see your little islands up there.

CYI Roger.

CYI Canary has acquisition of the Agena.

HOU Roger Canary.

CYI It's looking good.

CYI Gemini 10,Canary.

S/C 10, go ahead.

CYI OK we'd like to have you move your cryoquantity switch to O_2 for about 10 seconds and then switch it off.

S/C Roger, it's O_2.

CYI Gemini 10, Canary Cap Com.

CYI Gemini 10, Canary Cap Com.

S/C 10, go ahead.

CYI OK we have about a minute to our LOS here, we'll be standing by.

S/C Roger.

CYI Gemini TM LOS.

END OF TAPE

This is Gemini Control, 63 hours, 24 minutes into the flight and Carnarvon has just acquired telemetry acquisition of Gemini 10. We'll stand by for some voice transmission during this pass.

CRO Intermittant TM at Carnarvon.

HOU Roger.

CRO Flight, Carnarvon. Do you want to position that TM switch to command?

HOU No, go ahead and leave it where it is.

CRO Roger.

CRO Gemini 10, Carnarvon. We have nothing for you. We're looking at your systems. All systems are go. We're standing by.

S/C Roger. We're in load module pitch, bringing up the platform.

CRO Roger.

CRO Carnarvon has telemetry LOS.

HOU Roger.

CRO Gemini and all systems were go.

HOU Roger.

This is Gemini Control. It was a very short pass at Carnarvon. The elevation angles very low and the spacecraft just skirted the ring of acquisition there. We intend to perform the D-10 experiment this morning between 64 hours and five minutes elapsed time and 64 hours, 40 minutes elapsed time. This is the Ion Sensing Attitude Control Experiment designed to investigate whether the spacecraft attitude in yaw and pitch can be determined by measuring

ion flow variations. These will be recorded by ion sensors on two booms which will be extended from the retrograde adapter. This sensor data will be compared to data obtained from the inertial guidance system and from the horizon scanner. Results of this comparison plus astronaut evaluation will form the basis for further development of simple lightweight orbital attitude determination system. The sponsor for this experiment is the Upper Atmospheric Physics Branch of the Air Force Cambridge Research Laboratory at Hanscomb Field, Massachusetts. The spacecraft will be out of range now of tracking for sometime. The next station due to acquire is Grand Turk at an elapsed time of 64 hours, eight minutes, 46 seconds. This is Gemini Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 7:55 AM TAPE 203 PAGE 1

This is Gemini Control 63 hours 34 minutes into the flight. We are going to play the tape of that Carnarvon pass for you. After we got telemetry LOS and after we had started talking this last time there was some additional voice transmission between the Carnarvon Cap Com and the crew concerning another French nuclear test. So we will play this tape in its entirety for you. Here it is now.

CRO Carnarvon has TM-1 solid Gemini. All systems are go.

HOU Roger.

CRO Telemetry was on at acquisition. Intermittent TM at Carnarvon.

HOU Roger.

CRO Flight, Carnarvon. Do you want position that TM switch to command.

HOU No, go ahead and leave it where it is.

CRO Roger. Gemini 10, Carnarvon. We have nothing for you. We are looking at your systems. All systems are go. We are standing by.

S/C Roger. We are loading moduel 6 and bringing up the platform.

CRO Roger. Carnarvon has telemetry LOS.

HOU Roger.

CRO On Gemini and all systems were go.

HOU Roger.

CRO Flight, Carnarvon.

HOU Go.

CRO Those summaries may look pretty bad. Telemetry was quite intermittent throughout the pass, low elevation and all.

HOU Okay, did you contact the crew?

CRO That is affirmative. Did you hear?

HOU Negative. Look, I would like for you to call them and tell them to not look at the ground between Carnarvon and the States.

CRO Roger, that. 10, this is Carnarvon. We have been informed to pass on to you not to look at the ground between our LOS and the state-side pass. Do you copy, 10?

S/C Roger, we copy.

CRO Okay. Reacquire TM-1 Gemini. Carnarvon has ac aid contact the Agena.

HOU Roger.

CRO Telemetry solid Agena. All systems go.

HOU Roger.

CRO Did you get the comment about the crew loading module 6 and bringing up the platform?

HOU Affirm.

CRO Roger. LOS Gemini.

HOU Roger.

END OF TAPE

This is Gemini Control 64 hours 8 minutes into the flight. We're just about to acquire at Grand Turk. Here we go.

HOU] .....sleep in your spacious quarters.

S/C Great.

HOU Fine. I'd like to give you a brief rundown of what we plan to do today as far as using the remaining fuel we've got. We decided last night to burn everything we've got in our OAMS system. Use the VW tank when required and it appears that you'll probably be fuel critical with plenty of oxidizer. We plan to burn it all out if it's required and we will use the RCS for aligning for retrofire. Is - Does that meet with your approval?

S/C That's fine.

HOU OK. Are you ready to copy a continuation of today's flight plan?

S/C We're ready to copy.

HOU Roger. At 64:22 over Canary you'll get a PLA block update and we'd like a crew status report at that time. At 64:46 is sunset and from 64:46 to 65:23 we'd like to run D-5, Mode D. On this Mode D Mike, we'd like to track the stars with the photometer until it disappears. You can press START COMP when it's superimposed on the horizon but track it until it disappears completely. If you're too pressed for time, just drop the computer off the term process and

do a plane Mode A. Do you understand that?

S/C Yes we go you C.C.

HOU Roger. At 65:25 to 65:55, D-10 Mode E. At 65:55 to 66:10, D-10 Mode C, Charlie. AT 66:10 to 66:40, D-10 Mode D, Delta. At 66:40 to 67:25, we have a stowage period. You can load module 4, bring the spacecraft SEF, and platform mode. We'd like to leave D-10 Ion sensor switch on until your retro-check list. At 67:20, we'll give you a reentry update. We'd like a fule cell purge, one then two, a cryoquantity readout, and activate the H_2 tanks squib. At 67:25 to 68:10, eat period. At 68:10 until TR you can go through your retro preparation. At 68:55, we'll give you a reentry update and at 70:10:30, is your retrofire time. At least our best guess at this time for 44-1. Did you copy?

S/C Roger. I copied. You faded out for a couple of things. Going back to the first D-5, understand that takes place from 64:40 through that one night pass, is that affirmative?

HOU That's right. That's 64:46 Mike.

S/C Ok. and then after that D-5-D, I've got a blank spot between it and 65:55. What did you say in there?

HOU Roger. 65:25 to 65:55, D-10 Mode Easy.

S/C OK copied that and I got another blank spot just standby one.

HOU Go to prelaunch please.

S/C Load module four go SEF platform, leave the D-10 on to retrocheck list then what comes between that and the fuel cell purge?

HOU Roger. At 67:20 we'll give you a reentry update then purge the fuel cells.

S/C OK I got it all. Thank you.

HOU Roger. Will you go to prelaunch?

S/C We're in prelaunch.

HOU Roger. We're sending you an update, state vector and a TF.

S/C Update received.

HOU Roger.

HOU Weather looks good Mike for a 44-1 and we'd like to check on some of the items that you jettisoned for weight and balance on this retro. Is it S-12 or S-10 that you have missing?

S/C S-12 is missing. We still have not found it, so we better assume that it got out of the cockpit about the time I came back in.

HOU Roger. That's S-12. That's a pretty big one, hard to loose.

S/C You're not kidding.

HOU Did you jettison or loose any of your Hasselblad magazines after you lost the camera?

S/C Negative. There was one magazine on the camera, of course it went with it, but the other Hasselblad magazines I still have.

HOU Roger. Understand, you still have them. I've got a flight plan node update for you, if you're ready to copy that.

S/C OK.

HOU Roger. For rev 39, 63.0 west, right ascension is 04 hours 39 minutes.

S/C Got that thank you.

HOU Mike that is all we have at this time. We got about 2-1/2 minutes to LOS. We're standing by.

S/C OK. We're doing a D-10 right now.

HOU Roger.

S/C That D-10 is really something.....pitch and yaw pickup. I used it for this night platform align and it's pretty darn smart.

HOU Excellent. Glad to hear it.

S/C That's a great bank.

GTI LOS Grand Turk

END OF TAPE

This is Gemini Control. We're out of acquisition of Antigua now. The D-5 experiment that was passed up to be performed from sunset at 64:46, 64 hours, 46 minutes, to 65 hours, 23 minutes is the Star Occultation Navigation Experiment, which we are attempting to determine the feasibility in operational value of star occulting measurements in the development of an accurate, simple orbital navigation system. In this, the crew uses a photo-electrical occultation telescope, or a photometer, and will attempt to determine the orbit of an earth satellite by measuring the time six stars dip behind an established horizon. They locate a star about to be occulted, point the photometer at the star, then they track the star as it passes into the atmosphere and behind the edge of the earth. They will try to acquire at least six stars during this one night pass. The sponsor of this experiment is the Navigation and Guidance Division, /the Air Force Avionics Laboratory at Wright Patterson Air Force Base, Ohio. We might explain the modes on the D-10 that C. C. Williams was talking about. Mode E on D-10 is a yaw attitude. Mode C is a roll attitude, and Mode D is pitch attitude. We're due to acquire Gemini 10 at the Canary Islands right about now. We'll stand by for that pass.

S/C Confirm that with Houston and suggest to him that maybe sometime we can take some S-1 picture with the S-1 camera even though we won't have the star patterns in plane directions as briefed. At least we'll get something. We could do it simultaneously with the D-10, for instance.

HOU Sure, go ahead.

CYI Say again, Flight.

HOU I said, yes, go ahead, if they can.

CYI Rog. Houston concurs. Says go ahead if you can.

S/C Okay.

CYI Okay. I'd like to get a crew status report on y'all.

S/C Okay. Crew status is go. Stand by for the drink counter. Drink counter is 01022 and we're both just finishing up breakfast.

CYI Roger. Okay, we'd like you to make a note of ground elapsed time when you hit the VW tank.

S/C Okay. The regulator pressure is still up at 300, our source pressure is down about 60.

CYI Roger, copy. Okay, I have a PLA block update for you when you're ready to copy.

S/C Okay, fine.

S/C Go ahead when you get them read.

CYI All right. Area 42-1, GETRC is 66:55:05. RET 400 K is 24 plus 44. RETRB is 29 plus 34. Area 43-1, 68:33:25. 23 plus 12. 28 plus 07. Area 44-1, 70:11:12. 22 plus 01. 27 plus 17. Area 45-4, 73:03:02. 24 plus 11. 29 plus 10. Area 46-4, 74:41:09. 22 plus 46. 27 plus 58. Area 47-4, 76:18:54. 21 plus 43. 27 plus 09. Bank angle for all areas is roll left 90, roll right 90. Weather is good in all areas except

43-1. And no set maneuver is required. All these are based upon a 20 degree pitch angle. Over.

S/C Say again 42-1, and 47-4, please.

CYI Roger. 42-1 is 66:55:05. 24 plus 44. 29 plus 34. 47-4, is that the other one you wanted?

S/C Yes. I have 47-4, 76:18:54. That's it.

CYI Rog. 21 plus 43. 27 plus 09.

S/C Okay, fine.

CYI Okay, sending you a GX.

CYI 10, Canary.

S/C 10, go.

CYI Okay. You were saying your OAMS source pressure was indicating 60, is that correct?

S/C Yes, that's right.....just to multiply that by 10.

CYI That's okay. We'll need 687 on the ground here.

S/C Okay, 687.

HOU Canary, Houston Flight.

CYI Go, Flight.

HOU Have a look in your TM station at George Charlie 22 for PCM count.

CYI Roger.

CYI 10, Canary.

S/C 10, go.

CYI Okay, I'd like to have you put your C-adapter to the command position.

S/C C-adapter to command and cryo quantity to O_2.

CYI Okay. Would you put your C-reentry to continuous.

S/C C-reentry to continuous.

CYI And your data select to reentry.

S/C Data select to reentry.

CYI Roger, thank you.

S/C We've been putting our antennas off so you can straighten that now and position it.....

CYI Roger.

S/C .....is 157.

CYI 157, right.

END OF TAPE

HOU Canary, Houston Flight.

CYI Go., Flight.

HOU Standby a second.

CYI Roger.

CYI Canary, we'll be standing by. We've got about a minutes until LOS here.

HOU Roger. Thank you.

S/C Canary, Gemini 10.

CYI 10, Canary, GO.

S/C (GARBLED)

CYI Did not copy 10.

CYI We've had LOS Flight.

HOU Say again.

CYI We've had LOS on the Gemini. Agena looks real good.

This is Gemini Control 64 hours 31 minutes into the flight. We have loss of signal at Canary. The next station to acquire Gemini 10 will be Carnarvon at 64 hours 57 minutes 36 seconds. This is Gemini Control.

END OF TAPE

KNO Kano remote.

HOU Gemini 10, Houston Cap Com.

S/C Gemini 10, go.

HOU Roger, we are standing by. Did you have something you wanted to say?

S/C Negative, except the D-5 is working like a charm.

HOU Very good.

S/C ...spacecraft will...

HOU That is Houston. We have got about one minute until LOS at Kano. Standing by.

AFD Carnarvon Cap Com, AFD.

CRO AFD, Carnarvon. Go ahead.

AFD We have nothing further for you at this time.

CRO Thank you.

END OF TAPE

This is Gemini Control 64 hours 57 minutes into the flight. Gemini 10 in it's 40th revolution and just about to acquire at the Carnarvon station. We'll standby for that conversation.

CRO Carnarvon has Gemini TM solid, all systems are GO.

HOU Roger, Carnarvon.

CRO Gemini 10, Carnarvon standing by.

S/C Roger. We're right in the middle of D-5 Mode D. We just occulted Regulus and now Denebola.

CRO Roger.

CRO Carnarvon has C-band track.

This is Gemini Control, we're still standing by at Carnarvon. The crew is in the midst of the D-5 star occultation experiment at the present time. We'll continue to standby through this pass.

CRO Carnarvon has acq aid contact Agena.

HOU Roger.

CRO TM solid Agena, all systems are GO.

HOU Roger.

This is Gemini Control. Gemini 10 will be within range of Carnarvon for about another two minutes. We'll continue to standby. Apparently the crew is busy with the D-5 experiment.

CRO 10, this is Carnarvon. We have a minute before LOS, standing by.

S/C 10, Roger.

CRO Carnarvon has telemetry LOS Gemini, all systems GO.

HOU Roger.

This is Gemini Control 65 hours 8 minutes into the flight. Gemini 10 has passed out of range of Carnarvon now. The spacecraft will miss the Canton Island station on this pass. Texas station will be the next to acquire at 65 hours 42 minutes 41 seconds. This is Gemini Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 10:02 AM, TAPE 209 PAGE 1

This is Gemini Control at 65 hours 42 minutes into the flight. And the Texas tracking station should acquire Gemini 10 in about 30 seconds. According to the flight plan, the D-10 experiment should be underway at this time and it will be conducted throughout this pass through the Texas station and the - some of the stations down the West Indies, Grand Bahama. We will stand by to acquire the spacecraft momentarily.

HOU Gemini 10, Houston Cap Com.

S/C 10, go.

HOU Roger, Mike. How did the D-5 go? Were you able to do mode D or did you have to switch over to A?

S/C Roger, we did mode D, all residuals except for one where less than 2/10ths of a degree and not more than 15/100ths of a degree. The one was due to an error in procedure, which we can check back - trace back on.

HOU Roger, sounds real good. You are doing the D-10 mode E at this time, is that right?

S/C Roger. Do you want a mode E, or do you want a pitch steady? We have already done one mode E.

HOU Flight Plan calls for E, John. So why don't you go ahead.

S/C Okay.

HOU I would like to confirm at this time, whether or not you lost your flight plan book, or not. Can you do that.

S/C Yes, we still have a flight plan book.

HOU You do have it? I have got nothing else to pass up to you at this time. Weather still looks good in the recovery area and we will be standing by.

That is 80 PCM count. Thank you.

S/C Roger.

ANT LOS Antigua.

This is Gemini Control. We will continue to stand by here, bring you any further transmissions during this pass. The Flight Surgeon, Dr. Fred Kelly, reports that since awakening this morning, John Young's heart rate has been averaging 70. Mike Collins averaging in the low mid-60's. He says that each crewman has had about 15 pounds of water since the mission began and he is pleased with this. This is Gemini Control. We are standing by.

END OF TAPE

This is Gemini Control. Gemini 10 is still about two and a half minutes away from Loss of Signal at Antigua and we'll continue to stand by.

GTI LOS Grand Turk.

HOU Gemini 10, Houston Cap Com. One minute to LOS. Standing by.

S/C Oh, roger. We're on D-10 in Mode E. Looks real good.

HOU Roger, John.

S/C The deals are awful little at pitch. Just...another platform alignment. The platform gets off in these - this crazy orbit, and I'll try to align the platform again.

HOU Roger.

S/C But it still looks like except for a minor calibration problem, it really is something.

HOU Roger. Your rates look real good down here. It looks like you're doing a good job of flying it.

This is Gemini Control, 65 hours, 57 minutes into the flight. We're now out of range of Antigua but we expect to acquire at the Canary Island station at 65 hours, 58 minutes and 11 seconds and we'll continue to stand by for any transmissions through that station although we have advised the Canary Island Cap Com that we have nothing for him to pass up to the crew. We will stand by and then we will - there's overlapping coverage between the Canary

Islands and the Kano, Nigeria station. We would remote any conversation from Kano through the Mission Control Center here so we will stand by through the Canary Islands and Kano passes. This is Gemini Control.

END OF TAPE

CYI Canary has TM solid on the Agena, the Agena is GO.

HOU Roger.

This is Gemini Control at 66 hours and 5 minutes into the flight. We're continuing to standby during this Canary pass. We've just been advised by the Cap Com, Astronaut C. C. Williams, that he does not intend to have much of any conversation with the crew during the Kano pass either. He explained that both crewmen are pretty busy at this time with the D-10 experiment. Command Pilot John Young flying the spacecraft, Pilot Mike Collins photographing the flight direction indicator to get readings on the attitudes. This is Gemini Control.

CYI Gemini 10, Canary. About a minute to your LOS. We're standing by.

S/C 10, Roger.

CYI Canary has had TM LOS. C-band LOS on the Gemini spacecraft. All systems were GO at LOS.

HOU Roger Canary.

KNO Kano is remote.

HOU Go ahead

CYI Ok on the Agena, Is C and S band supposed to be off?

HOU They're supposed to be on.

CYI Supposed to be on. OK.

HOU Gemini 10, Houston Cap Com standing by.

S/C Roger. We're doing the pitch/ study on D-10.

HOU Roger.

S/C This pitch gear looks very good.

HOU Glad to hear it.

HOU Is Cecil B. deCollins taking pictures of the FPI?

S/C Roger. Mike got some inside black and white pictures. We also got some pictures of some objects floating around the cockpit that might be interesting. We don't find anything moving up,down, sideways, or any way for that matter.

HOU Roger.

S/C Same thing at EVA. Near as I could tell, I think its just a question of the dynamics of it. But nothing is static EVA (garbled) staging of it. It gives the illusion of going away from whatever you - you've grabbed a hold of.

HOU Right. Then Mr. Newton was right.

S/C Afraid so.

END OF TAPE

HOU Gemini 10, Houston Cap Com. We are about 1 minute from LOS. Standing by.

S/C 10, roger.

Houston, Gemini 10. We are loading module 4 now.

HOU Roger.

S/C It won't mess up this D-10, will it?

HOU Negative, it won't have anything to do with it.

S/C I didn't think so.

This is Gemini Control 66 hours 14 minutes into the flight. Gemini 10 out of range of the Kano station now. Next station to acquire will be Carnarvon. Gemini 10 passes north of the Tananarive station on this revolution. Carnarvon will acquire at 66 hours 33 minutes 40 seconds elapsed time. Here in the Control Center, we have activated the time to retrofire clock. We will update this time about 2 hours from now. But we expect the final retrofire time to be within 5 seconds of what the clock presently shows and at the present time we show we are 3 hours 55 minutes 9 seconds away from retrofire. This is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours, 33 minutes into the flight and Gemini 10 is in its 41st revolution and should be acquired by the Carnarvon in about 30 seconds. We'll stand by for any conversation that ensues during this pass.

CRO Carnarvon has acq aid contact Gemini.

Fl solid Gemini.

CRO Flight, Carnarvon.

HOU Go.

CRO What's our lower limit on O_2 tank pressure?

HOU Stand by one. 800 grounds is what we'd like to keep it, Carnarvon.

CRO Okay, we're showing 763. I'll have to boost it up a little.

HOU Carnarvon from Flight. Send us a second Gemini main, please.

CRO Roger there.

CRO 10, Carnarvon.

S/C 10, go.

CRO Okay. I want you to take a look at that O_2 tank pressure and pump it up a little bit till you get it up to 670.

S/C Roger.

CRO AF solid C-Band track.

HOU Roger.

S/C Carnarvon, 10. What time sunrise?

CRO Stand by. How about a sunrise time?

HOU We'll get you one.

HOU Carnarvon, Flight.

CRO Go ahead.

HOU 66 plus 54 plus 41.

CRO Okay. 10, Carnarvon. Sunrise time 66:54:41.

S/C Okay, roger.

CRO You can go back to auto on your heater. I was showing about 810 on the ground. You should have about 675.

S/C Roger.

CRO Carnarvon has acq aid contact Agena.

HOU Roger.

CRO Carnarvon has telemetry solid Agena. All systems go.

END OF TAPE

HOU Carnarvon Com Flight, LOS main Gemini.

CRO Roger. One minute until LOS standing by.

S/C Roger Carnarvon, Thank you.

CRO Carnarvon has LOS Gemini. All systems go at LOS.

HOU Roger Carnarvon.

This is Gemini Control 66 hours 44 minutes into the flight. And Gemini 10 is out of range of the Carnarvon station. Next station to acquire will be Canton Island in about - at 66 hours 56 minutes one second. This is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours, 56 minutes. We're coming into acquisition at Canton now. We'll stand by there.

S/C Okay, C. C. We still are showing 300 plus on our regulated pressure. Our source pressure is just a shade over .....I'll find out when I can... ....We finished up a little bit early on the.....

HOU Roger, Gemini 10. You are nearly unreadable. I'll pick you up over the States a little bit later. If you can read me, request you hold any comments you may have on D-5 and D-10 until we are over Florida.

S/C Gemini 10, Roger.

(PAUSE)

This is Gemini Control, 67 hours, two minutes into the flight. We've lost acquisition with Canton. The next station to acquire will be Guaymas, Mexico. At 67 hours, 14 minutes, 17 seconds, this is Gemini Control.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 11:34 AM, TAPE 216 PAGE 1

This is Gemini Control at 67 hours 13 minutes into the flight. Gemini 10 is in its 41st revolution coming up on the Guaymas, Mexico station. We should acquire Guaymas within the next 30 seconds or so. We will stand by for conversation during this state-side pass.

GYM Guaymas has Gemini TM solid. All systems go, Flight.

HOU Roger, Guaymas.

GYM Houston Flight, Guaymas

HOU Go ahead.

GYM We are still showing 160 count for OGC 22.

HOU Roger, 160.

GYM 160. Gemini 10, Guaymas Cap Com. You are looking good on the ground. We are standing by.

S/C Okay, Guaymas. Thank you. We are restowing stuff.

GYM Roger.

S/C And fuel cell purge.is in progress, just about complete.

GYM Okay, let us know when it is completed, Gemini 10.

S/C Sure will, I will go to mode 3 for 10 seconds and ....

GYM Okay, real fine.

HOU Guaymas, Flight.

GYM Go ahead Flight.

HOU Be sure they understand we want them to wait on the hydrogen squib until they are over ETR.

GYM Roger Flight. Gemini 10, Guaymas.

S/C 10, go ahead.

GYM Okay, here is an advisory. They want you to wait until you get over the ETR before blowing the hydrogen tank squib. Do you copy, 10?

S/C Roger.

GYM Okay.

S/C Purge complete.

GYM Roger, 10.
Can we get your quantity read to H2, 10?

S/C Roger, we have it. Sorry about that. I was turned around backwards in the seat.

GYM Okay.

S/C I won't tell you what John is doing.

GYM Roger. We kind of guessed that.
Still looking real good, Flight.

HOU Roger, Guaymas.

GYM Guaymas has Agena TM solid, S-band track.

HOU Roger.

GYM Agena looks good.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. We'll have a partial reentry update for you over Carnarvon this next pass at about 68 plus 10. They'll give you your nominal IVI's and weather and so forth. And then on your next pass over the States at approximately 68 plus 55, we'll give you your reentry computer load TR and all that good stuff.

S/C Oh, roger.

HOU Gemini 10, Houston Cap Com. Request you go to H_2 on your cryo quantity and leave it there.

S/C Roger, H_2 and leave it there.

HOU Mike, I guess you're going to have to come down pretty soon. You're about to start eating your last meal.

S/C Mike: That's right.....there's only one left.
John: ....you should see him. He's eating my last meal too.

HOU Right.

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger. We're ready for that hydrogen tank squib. Would you move your hydrogen tank vacuum from safe to vent. And you have to arm the experiment bus before you do that.

S/C Yeh, we already did that, bus arm experiment, and we heard it bawl when we put it to bed.

HOU Roger.

HOU Gemini 10, Houston Cap Com. Stand by for a DCS light. We'll send you a load.

S/C 10, right. C. C.?

HOU Roger.

S/C My guess it might have dented something because the platform mode sort of jumped up and down when it....

HOU Roger, John, understand.

S/C I don't know what it could have been. We're reading now about 28% hydrogen quantity and about 560 on the cryo.

HOU Roger. Gemini 10, that last DCS load was an accelerometer update.

GBI LOS GBI.

(PAUSE)

HOU Gemini 10, Houston Cap Com. About one minute to LOS. Standing by.

S/C How's the weather in 24-1?

HOU Looks real good. We'll have a weather report for you over Carnarvon.

S/C Good show.....

ANT LOS Antigua.

This is Gemini Control, 67 hours, 32 minutes into the flight. Gemini 10 has just lost acquisition at Antigua station. Canary Island

tracking station will pick it up at 67 hours, 34 minutes, 56 seconds into the flight. We'll stand by there for any transmissions. This is Gemini Control.

END OF TAPE

HOU Canary from Flight.

CYI Go, Flight

HOU Normal pass for you. However, we would like you to ask them to turn the hydrogen quantity read switch to off and then back on and you take a look at it. It held very steady while there was noise on some other parameters. We want to check to see that its read.

CYI Ok you want it turned off and then back on.

HOU Yes and watch it as he does it.

CYI Roger will do.

CYI Canary has TM solid, C-band track Gemini.

HOU Roger Canary.

CYI Looking good.

CYI Gemini 10, Canary Cap Com.

S/C 10, go ahead.

CYI Ok. We'd like to have you move your quantity read switch to the off position for a moment and then put it back to H_2.

S/C Roger. Off and then back to H_2.

CYI Roger. We got that.

CYI We've got nothing else for you. We'll be standing by.

S/C Roger.

CYI Flight, Canary Cap Com.

HOU Go ahead.

CYI Ok. That H_2 quantity was reading 71 to 72 PCM counts, both before and after. He turned it off and then back on.

HOU OK.

CYI We'll keep an eye on it.

HOU OK. Sounds good.

HOU Canary from Flight.

CYI Go, Flight.

HOU From our old buddy here at Gemini main and an OVC.

CYI Roger.

CYI We just sent you a couple.

HOU Roger.

This is Gemini Control at 67 hours 41 minutes into the flight. Gemini 10 is moving into range of the Kano station. We'll continue to standby during this pass.

HOU Roger Canary, it's looking very good.

CYI Roger.

This is Gemini Control. The flight plan schedules the second meal of the day for the crew during this period. At 68 hours 15 minutes elapse time the reentry time will be updated. This is Gemini Control at 67 hours 43 minutes.

CYI Gemini 10, Canary Cap Com. About a minute until LOS, we'll be standing by.

S/C Roger.

CYI Flight, Canary Cap Com.

HOU Go ahead.

CYI	OK. We've had LOS on the Gemini. PCM counts on the hydrogen were 70 to 71 at LOS.
HOU	Fine.
KNO	Kano is remote.
HOU	Gemini 10, Houston Cap Com. Standing by.
S/C	10, Roger.
S/C	The (garbled)
HOU	Roger.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger, can we have an OAMS reg pressure readout please?

S/C ..315.

HOU Roger.

HOU Canary, Houston Flight.

CYI Go Flight.

HOU Can you resend your last Gemini main summary to us?

CYI Roger.

HOU Gemini 10, Houston Cap Com. One minute from LOS. Standing by.

S/C (Garbled)

This is Gemini Control 67 hours 51 minutes into the flight. Gemini 10 out of range now of the Kano station. We will be coming up on Tananarive station at 67 hours 55 minutes 38 seconds. We will come back just prior to acquisition at Tananarive. This is Gemini Control.

END OF TAPE

HOU Gemini 10, Houston Cap Com.

S/C 10, go ahead.

HOU Roger, can we have an OAMS reg pressure readout please?

S/C ..315.

HOU Roger.

HOU Canary, Houston Flight.

CYI Go Flight.

HOU Can you resend your last Gemini main summary to us?

CYI Roger.

HOU Gemini 10, Houston Cap Com. One minute from LOS. Standing by.

S/C (Garbled)

This is Gemini Control 67 hours 51 minutes into the flight. Gemini 10 out of range now of the Kano station. We will be coming up on Tananarive station at 67 hours 55 minutes 38 seconds. We will come back just prior to acquisition at Tananarive. This is Gemini Control.

END OF TAPE

This is Gemini Control Houston 67 hours 56 minutes into the flight. C. C. Williams is going to talk to the crew now that we're in contact via Tananarive. So we'll standby and monitor that conversation. There is no conversation right now but we expect some.

HOU Gemini 10, Houston Cap Com.

One minute to LOS. Standing by.

S/C Roger.

TAN Tananarive LOS.

This is Gemini Control Houston, a long quiet pass. 68 hours and 4 minutes. We'll be back with the spacecraft over Carnarvon about 6 minutes from now. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 66 hours, 10 minutes into the Flight. Carnarvon is looking up now on Gemini 10. Let's listen in there.

CRO Is that good enough or do you want them to cal?

HOU Let's calibrate.

CRO Okay. Gemini 10, Carnarvon.

S/C Go.

CRO Would you place your TM cal switch to number 2 position for about ten seconds?

S/C Roger.

HOU And give us a Gemini main while you're in calibrate. Carnarvon?

CRO Roger there. Okay, I have some reentry parameters and some weather for you when you're ready to copy.

S/C Stand by one.

CRO That main summary may not have gotten out in time.

S/C Okay, ready to copy.

CRO Okay, nominal IVI: aft 304, down 114. Bank angle initial deflection at 0204 up; at 55 degrees, 400 up; and at 90 degrees 84 down. Pitch gimbal at 400 K, 100. You have a light lightest horizon at retrofire and a lightest horizon at 400 K. The elapsed time to begin blackout, 24 plus 14. End blackout, 29 plus 05. Drogue, 33 plus 50. Main at 37 plus 24. Retro ritzon angle is minus 20 degrees. Weather. [illegible] visibility 15 miles.

wind at 8. Wave height, two to three feet. Altimeter setting, 30.06. There are a few showers in the area. Recovery call sign is an aircraft, Air Boss 1. It's on station, and the ship Guadalcanal is on station. And that's all we've got for you at the present time.

S/C Roger.

S/C Well, see you next time around. We sure enjoyed working with you.

CRO Thank you very much. Enjoyed it down here also.

S/C You guys got us out of a tense situation into a pretty good one there toward the end.

CRO Okay, fine, thank you.

CRO Flight, Carnarvon.

HOU Okay, go.

CRO Okay, PCM counts during the cal was 194.

HOU All right.

CRO We've got about five minutes before LOS. We'll be standing by.

HOU Carnarvon from Flight.

CRO Go ahead.

HOU Gemini OBC, please?

CRO Roger, coming your way.

[illegible] you have a manual on your heater?

CRO Carnarvon has acq aid contact with the Agena. Solid TM Agena. All systems go.

HOU Roger.

CRO It looks like he went to manual on his O_2 heater, Flight.

HOU Rog. What's the pressure at?

CRO 821.

HOU Okay.

CRO Showing 850 on O_2 tank pressure.

HOU Right.

CRO Carnarvon has LOS Gemini. All systems go at LOS.

HOU Roger.

END OF TAPE

This is Gemini Control Houston 68 hours 31 minutes into the flight. We are set up to remote through Canton Island. C. C. Williams is talking with 10 in there.

HOU Retro update this pass over the states at ETR.

S/C Roger. I guess we better come in, we've run out of food.

HOU Roger John. How are you coming with your house cleaning?

S/C Oh, just fine. There's really not much to clean up anymore.

HOU I guess not.

S/C That's really the way to handle house keeping in the states.

HOU I've got nothing for you this pass over Canton. We'll be standing by. We've got about 8 minutes until LOS.

HOU Gemini 10, Houston Cap Com.
We're about one minute from LOS. Standing by. We'll pick you up over the states in about 10 minutes.

S/C 10, Roger.

END OF TAPE

This is Gemini Control Houston 68 hours 50 minutes into the flight. Guaymas is locked up on Gemini 10 and in the course of this pass across the states the crew will get a rather full time to retro fire update also their computer load will be updated. Guaymas is talking to 10, now let's tune in.

GYM They're still looking good flight.

HOU Roger.

GYM Ring A is reading a 296, Ring B 298, and source pressure at 2440 on both.

HOU 2440

GYM Roger.
Looks great.

GYM Still looking good Flight.

HOU Roger.

GYM Guaymas has Agena TM solid.
All systems look good.

HOU Gemini 10 Houston Cap Com.

S/C Gemini 10, GO.

HOU Roger would you switch your computer to pre-launch and we'll give you a load.

S/C Computer is in pre-launch.

HOU Roger. I have a retro update for you if you're ready to copy.

S/C Roger go ahead.

HOU Roger. GMTRC 20:30:51, GETRC 70:10:35, RET 400 K, 22:12, RETRB 27:40, bank left 55, bank right 55.

[illegible]

[illegible] your load up.

load received.

[illegible] TF.

[illegible].

Roger. I have your MDIU values if you'd like
to copy them.

S/C [illegible]

MDIU Roger. address 3-40 0 51, address 04-57 [illegible],
address [illegible] 45 5, address 06-57 93 7,
address 07-45 15 4, address 08-40 45 9,
address 09-34 54 4, address 10-02 65 6,
address 11-25 [illegible], do you copy. Over.

Roger we copied. (partial)

Roger [illegible]. We'll be back here on the [illegible]
[illegible] replies to it.

Roger

[illegible] Antigua.

HOU Gemini 10, Houston Cap Com.

S/C This is 10, go ahead.

HOU Roger, we've read out these MDIU values on the ground and have confirmed them. How do they look up there?

S/C They look mighty pretty.

HOU Roger. I'd like at this time on your water management panel to confirm H_2O valve is normal, condensate valve is normal and the dump valve off.

S/C While John's doing that, C. C., I'll read out all the values and they read identically except for 67 which reads one digit off. I read 45188 instead of 45189. I think it's the noises.

HOU Roger. I agree with you, Mike.

S/C Roger, it's normal, normal, off.

HOU Roger, normal, normal, off. Over Tananarive if you can get to it, we'd like to move the condensate valve to the tank fill position, that's one position counterclockwise.

S/C What for, C. C.?

HOU Say again, John.

S/C Why do you want to do that?

HOU That's to isolate the suit heat exchanger, John, for a post-flight evaluation. If you can get to it fine. If not, don't worry about it.

S/C Okay, we'll do it.

HOU Gemini 10, Houston Cap Com.

S/C Go ahead.

HOU Roger. G & C confirms that address 67 is a good load. We're satisfied with it and it looks like you're all set.

S/C We are too.

GTI LOS Grand Turk.

HOU Gemini 10, Houston Cap Com. One minute from LOS, standing by.

S/C 10, roger.

This is Gemini Control Houston, 69 hours, nine minutes into the flight, and we're out of range of Bermuda. On this final rev if the crew follows the past precedent, we'll probably hear some Good Byes to the various stations as they pass over them for the last time. There will be one or two updates on their onboard clocks, their time to retrofire countdown clock, and the position - the times - of the various maneuvers will undoubtedly change a few seconds one way or the other. Canary is to acquire about three minutes from now. We'll be back then. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 69 hours 13 minutes into the flight. The Canary station is observing some maneuvering going on, a little yaw right a little yaw left as the crew is apparently getting set up to do their retrofire maneuver. Here is that conversation.

S/C Roger, thank you very much. I enjoyed talking to you. It has been a lot of fun.

CYI Roger, John.

S/C I want to thank everybody down there for all the hard work.

CYI Sure will. You all had a good spacecraft. Houston Flight, Canary Cap Com.

HOU Canary Houston Flight.

CYI Roger. We show that the spacecraft TR is lagging 125 miliseconds.

HOU 125 miliseconds, roger. Would you get an H2 read-out to the crew.

CYI Roger will do.

HOU Just get the positions to read.

CYI Roger. Gemini 10, Canary, would you switch your quantity read switch to H2 please? Okay,.. count on that H2 is 64 to 65.

HOU Say again, Canary.

CYI The ... count on George Charlie 22 is 6 - that is Charlie Alpha 09 is 64 - 65.

HOU Roger.

CYI Flight, Canary

HOU Go, Canary

CYI Okay, his rings are looking good, both opened at 2000.

HOU Say again.

CYI His RCS ring are both in 2000.

HOU 2000?

CYI 2460 on ring A and 2520 on ring B.

HOU That is fine. It is a little more than 2000.

CYI That was my goof. Houston Flight, Canary Cap' Com. LOS on the Gemini vehicle.

HOU (Garbled)

CYI ...going over the hill.

HOU Roger.

HOU Kano go remote.

KNO Kano remote.

HOU Gemini 10, Houston Cap Com standing by over Kano. We have about 6 and a half minutes to LOS.

S/C 10, roger. We are all set up here.

HOU Roger.

S/C Boy, I really hate to come back, it is really something up here.

HOU Take more groceries next time.

S/C Next time we will take more groceries. Good point.

END OF TAPE

HOU Gemini 10, Houston Cap Com. We're one minute from LOS. Standing by.

S/C Roger Houston.

END OF TAPE

This is Gemini Control Houston. John Young is talking via Tananarive and it's just possible the conversation may continue. Let's cut in there.

S/C I know there must have been a lot of work going on around that place. Lot of head scratching.

TAN (garbled) in tank fill position.

S/C Roger.

HOU Gemini 10 Houston Cap Com.

S/C 10, GO.

HOU Roger, verify/condensate valve in tank fill position.

S/C Roger, I reported that a couple of minutes ago. You probably didn't read it.

HOU Roger thank you.

HOU Gemini 10, Houston Cap Com. One minute to LOS. Standing by, we'll see you over Canton for a retrofire.

END OF TAPE

Gemini Control Houston here. [illegible] hours, 46 minutes. As we began to talk, Carnarvon acquired and began a conversation with John Young. The Carnarvon Flight Controller is updating the crew. He's going to give them a mark at 22 minutes to retrofire.

CRO 3 - 2 - 1 - Mark 22 minutes.

S/C And it is 00, 000. [illegible] Rendezvous.

CRO .....I'll give you a mark now at 46 hours and 49 minutes ground elapsed time. 5 - 4 - 3 - 2 - 1 - Mark [illegible].

S/C Right on it.

S/C Well, that is our last run. I certainly enjoyed working with [illegible].

CRO It's been a pleasure working with you too and we'll see you back in Houston.

S/C We appreciate all the late hours you put in.

CRO Thank you.

HOU Cap Com from Flight.

CRO Go ahead.

HOU About halfway through the pass, ask him if he plans to go to reentry trim [illegible]. We'd like him to do that.

CRO Okay. We're just about so, Flight.

HOU Roger.

CRO We [illegible] 10 miles [illegible] 100 milliseconds.

HOU [illegible]

CRO [illegible]

HOU You just dropped down a little bit then. You might have moved away from the mike.

CRO How's that? What was that you said, Flight?

HOU You're a little bit lower than you were before.

CRO Okay.

CRO Roger. What's the matter with it?

CRO Flight, Carnarvon. We're getting erratic TM. We've had a fade on telemetry.

HOU Roger, Carnarvon.

CRO We have Agena telemetry solid. All systems are go.

HOU Roger. Carnarvon would you send us a Gemini main and an OBC, please?

CRO We've had a fade out on telemetry.

HOU Okay, do the best you can.

CRO Roger.

END OF TAPE

This is Gemini Control Houston, 69 hours, 57 minutes into the flight and John Young and Mike Collins have tagged up with the last station prior to retrofire. A little later this afternoon about two and a half hours from now, we plan another major maneuver with the Agena 10 which presently trails Gemini 10 about 2400 miles. That will be the relative separation between the two at retrofire. At 4:41 CST we will light off the big engine on the Agena and drive Agena 10 up into a 750 nautical mile apogee. It then would also have a 207 nautical mile perigee. Later tonight at 11:32 Houston time a second burn will be made with the big engine. This will be to lower that apogee bringing it down to 207 by 190. And tomorrow morning at 3:20 Houston time we'll do another small burn with the 200 pound thrust second propulsion system on the Agena 10, the 31.9 foot per second burn, and this is to have the effect to circularize the Agena 10 in orbit at 190 nautical miles. Tracking will continue on the Agena for at least another two to three days and the vehicle is expected to remain at that altitude as a possible target of interest for later missions. This is Gemini Control Houston.

END OF TAPE

GEMINI 10 MISSION COMMENTARY, 7/21/66, 2:30 PM, TAPE 230 PAGE 1

This is Gemini Control Houston 70 hours 8 minutes into the flight. Young and Collins will retrofire this afternoon at an altitude of 202 nautical miles. This is some 42 miles higher than we have normally fired in the past Gemini flights. But entirely in keeping with the altitude records this crew has already set when they reached an apogee of 413 nautical miles. At the time of retrofire, the spacecraft will be moving at 25 600 feet per second approximately. They will have just passed apogee. They will be aligned in a 20 degree pitch down maneuver. And we are 30 seconds from retrofire. This will be a three-way retrofire countdown. They crew will countdown on-board as will the Capsule Communicator here in the Control Center, C. C. Williams and also Tom Golden, or retrofire officer, will also be joining in the count. They are counting 7 6 5 4 3 2 1 retrofire. Continuing to count up. Now Young is reporting retrofire sequence normal. He is assured from the ground that he looks good. He read out his attitudes and he apparently got four good retros. They fire sequentially, all four of them, imparting a total change of velocity of 320 feet per second, which is enough to cave in his orbit and bring him in. We are showing 1 minute and 25 seconds since retrofire. Hawaii should pick up the spacecraft in a very few minutes. Meanwhile we will rerack the retrofire voice communication and play that in its entirety. We are ready with that tape and let's play it now.

HOU TR minus 30 seconds - Mark. 10 - 9 - 8 - 7 - 6 - 5 - 4 - 3 - 2 - 1 - retrofire.

S/C That was a superfine automatic retrofire, 303 aft 5 right, 119 down.

HOU Roger, Gemini 10. Looks good.

S/C That was a good retro and yaw left.

HOU Roger, Gemini 10.

C. C. Williams is back in contact with 10. Let's tune in there.

HAW Hawaii has telemetry contact. Hawaii has C-band track, Gemini.

HOU Roger, Hawaii. Those IVI's look real good to us, Ed.

HAW Okay. Looks like he is pretty well squared away. Just lost C-band track in Hawaii. Back in again.

HOU Roger.

This is Gemini Control Houston. Dr. Berry is watching his heart and respiration scope here. He advises the heart rates are very casual, 80 beats per minute, 80 beats per minute. Ed Fendell in Hawaii is talking to the crew again. Let's switch back there.

HAW Normal

S/C Roger...

HAW Having intermittent telemetry.

HOU Roger.

HAW It is locking up now.

END OF TAPE

HAW Still looking real good down here.

S/C Roger.

This is Houston. The backup Command Pilot, Al Bean, advises that John Young does plan to get some movies out the window during his fiery reentry across the states. His path of flight will take him across the lower part of Texas. He'll skirt the Gulf Coast, cross the Florida Peninsula at approximately the Cape, and land at a point 460 nautical miles due east of the Cape. At least that is our aiming point. Let's go back to Hawaii now.

HOU Initial deflection 65 nautical miles up.

HAW Do you want me to tell them that?

HOU Affirm.

HAW 65 up.

HAW 10, Hawaii

S/C 10, go ahead.

HAW Based on your IVI's your initial deflection will be 65 up.

S/C Roger, thank you.

HOU Hawaii from Flight.

HAW Go ahead Flight.

HOU An OBC and a Gemini main we just got them.

HAW OK. Do you need them still?
Want some more?

HOU Yes, send us one more.

HAW Ok we'll send you an OBC every minute. We'll send

you another main and one at LOS.

HOU OK.

HOU He looks real good. He's got a 5.2 cabin, his rate secondary O_2 is 5110, left is 5118 - correction 5180. RCS is holding good, main bus and the suits are good.

HOU We've been copying, sounds real good.

This is Gemini Control. Our present altitude is just under 160 miles. The altitude again at retrofire was 202 nautical miles. Atlantic recovery advises that all helicopters are on station and they are prepared to do their part of the - this mission. We are 11 minutes 29 seconds since retrofire and 24 minutes 32 seconds away from splash. We expect to reacquire at Guaymas in 2 to 3 minutes. We'll come back up then.

END OF TAPE

HAW Hawaii has Agena solid, the vehicle is GO.

HOU Roger.

CAL California remote.

HOU Gemini 10, Houston Cap Com.

This is Gemini Control Houston 70 hours 25 minutes and we are 15 minutes since retrofire. C. C. Williams our Capsule Communicator has put in a first call remoting through California. He has not yet got an answer. Recovery advises that all aircraft are reporting on station in the Atlantic area. The aiming point again, 26 degrees 43 minutes north latitude, 72 degrees west longitude. Now Williams will update the crew on their maneuvers during the let down phase. Let's listen.

S/C How is super retro Charlie is he busy?

HOU Say again I didn't read you.

S/C I say have you got super retro down there.

HOU That's affirmative. He is right here.

S/C Roger.

GYM Guaymas has Gemini TM solid.

HOU Got you Guaymas. Send us a couple of OBC's.

GYM Roger Flight.

GYM Looking real good Flight.

HOU Roger.

GYM Guaymas remote.

HOU Gemini 10, Houston Cap Com.

S/C This is 10, go ahead.

HOU Roger. RET to 400K is 22 plus 07.

S/C Roger.

This is Gemini Control Houston. The spacecraft is now beginning its pass across northern Mexico. It is almost directly over Guaymas. It will cross the Rio Grande River just south of Del Rio, Texas. It will be at that point that it reaches the 400,000 foot mark, which you just hear Williams update the crew on. Present altitude is about a little under 80 miles.

HOU Gemini 10, Houston Cap Com.

S/C 10, GO.

HOU Roger. Your RETRB 27:38, bank left 45, bank right 45.

S/C Hey you guys are getting pretty accurate. We figured it 27:36 and 48 degrees.

HOU That's what the charts are for.

This is Gemini Control Houston. The spacecraft is now crossing the Rio Grande and the Flight Director advises we are at the 400,000 foot mark. Our elapse time is 70 hours 33 minutes. The blackout period lasting some three minutes is to begin at 70 hours 34 minutes and 34 seconds. We are about one minute away from blackout.

END OF TAPE

The spacecraft now is almost directly over Galveston, Texas, at which point it will move on across the Gulf, just south of New Orleans. The blackout period itself will begin perhaps 100 miles southwest of New Orleans.

HOU Houston Cap Com. About 1 minute - about a half minute to blackout.

This is Houston. We are about a minute into the blackout period. Blackout due to end at 39:30 and we make that 4 minutes from now correction. Earlier we said it would be only a 3 minute blackout. It is more on the order of 5 minutes. The spacecraft is now - would be directly south perhaps a 100 miles south of Pensicola, Florida.

This is Houston. The spacecraft is now almost directly over the Cape. About two minutes until the blackout period. (PAUSE) This is Houston. We are now about - the Gemini 10 should be about 250 nautical miles off the coast of Florida. Her present altitude about 17 miles and less than a minute until end of blackout. (PAUSE) This is Houston, we are now showing an elapsed time of 70 hours 39 minutes 43 seconds about 15 seconds beyond the end of blackout period. C. C. Williams has just put in a call to 10. No reply yet. Williams calling again. There is John Young's contact. William says "How are you doing, John?". John says "Oh, we are doing okay". Maybe we can catch a little bit of this communication. Let's try to pick it up.

HOU Roger, off the peg, it looks good down here, John.

S/C ...and 218 (Garbled) Do you copy?

HOU No, say again, John.

S/C (Garbled)

HOU Roger.

This is Houston. The Flight Director and the Flight Dynamics Officer compared data from as far back as Australia and they are very satisfied with everything they have seen. Chris Kraft said just a minute ago we should be right on the money. The crew would now be under the 50 000 foot mark according to our calculations. They should have a drogue chute out although they have not confirmed this orally. At 10 600 feet, the main chute is to be deployed.

S/C ....going down.

HOU Roger, John. You are on television.

S/C (Garbled)

END OF TAPE

This is Houston from the deck of the Guadalcanal where we're getting estimates - the first rough estimates - of something like five miles away.

S/C Houston Flight, this is Gemini 10, do you read? Over.

GUAD Gemini 10, this is Guadalcanal Control. You're loud and clear.

S/C Oh, roger.

GUAD Gemini 10, Guadalcanal Control. We have you in sight.

S/C This is 10. How far away are we?

GUAD 10, this is Guadalcanal. Approximately 8.5 miles.

S/C Roger.

This is Houston. We had splashdown and it looked to us like 70 hours, 46 minutes and about 45 seconds. The distance estimate is between four and five miles. That's from the ship as well as from the aiming point. Approximately four to five miles. And the swimmer helo is now positioning over the spacecraft. The Controllers here exceedingly pleased with the accuracy of this landing. Of course, they were not as close as the Gemini 9 crew. Gemini 9 holds the all time record. They came down .4 nautical miles from the aiming point and today it looks like something in the order of about four miles which is extremely close compared to many of the past flights.

GUAD .....is making his approach to the capsule. The seas are fairly calm. The capsule appears to be floating upright and the chute is laying along side.

Swim 1 is approximately 50 yards short of the spacecraft. He says the spacecraft is floating normally. Swim 1 is approximately 50 feet short. Very nice approach. Right down on the water and just a few feet from the spacecraft. The two swimmers have the collar and the first swimmer is right along side the spacecraft. The swimmers are in the water and swimming to the spacecraft. The swimmers are moving the collar around the spacecraft. The swimmers are moving the collar up to the aft end of the spacecraft and getting set to attach it. The spacecraft is floating very steadily, a little roll, very little pitch. The chute is still in the vicinity of the spacecraft. The collar is being strung around the spacecraft at this time. Swim 1 has made a beautiful deposit of swimmers along side the spacecraft. Right on target. They have attached the collar at several points and are at the forward end of the spacecraft attaching it to the front. The dye marker has deployed around the spacecraft. The spacecraft is still floating nicely, riding very well. The swimmers have inflated the collar. The spacecraft continues to float very nicely.

S/C Just fine. How's everything out there?

S/C Don't sweat it. Just take your time. Be careful out there now.

GUAD The swimmers appear to have communicated with the

astronauts.

S/C Swim 1, this is Gemini 10. How do you read, over.

SWIM 2 Swim 2. Read you loud and clear. How's it go?

S/C Oh, just fine. Thank you.

SWIM 1 Swim 1 read you loud and clear.

S/C Hey boys, take your time. We're not in any hurry. There's no use to hurry out there.

GUAD The swimmers have established communication with the astronauts and all appears to be okay. The spacecraft continues to float very nicely. A little bobbing around. Swim 1 is maintaining a nice position just down wind of the spacecraft. The collar is completely inflated at this time. The swimmers are now inflating the raft at the aft end of the spacecraft.

END OF TAPE

GUAD The raft is being taken around to the port side, The green dye is very evident and deployed very nicely. The main chute is zeroed along side the spacecraft. Now have climbed up on the collar and is descending the (garbled) collar.

AIR BOSS-1 Guadalcanal Air /Boss one is on sea, do you wish me to assume on sea commander. Over.

GUAD Air /Boss one, Guadalcanal. Negative. Over.

AIR BOSS-1 Roger.

GUAD OK.

S/C (garbled) pyro just go. I'd be careful back there if I were you.
Ok like I say, be careful there may be a lot of those pyros that didn't fire back there.

S/C We got all our secondary(garbled) their off in here though.

GUAD The swimmers are on top of the spacecraft and are signaling that the astronauts are OK. Everything is OK. The swimmer is working with the port hatch at this time. The spacecraft is continuing to float very nicely, very little rock, roll or pitch.

This is Gemini Control Houston. The cigars are out and they are being lighted in great profusion here. Almost a ritual now after these missions. The outstanding commentary

we've got from the scene out there today has been provided by Lieut. Comm. Bruce Fleming who is the Commander of Swim One ELO. He's been in communication with Young and it's the communications from the water have - are - have never been equal before. They are truely outstanding. We've heard Young chating with Fleming about the position of circuit breakers and so forth, and Fleming just passed the message that the astronauts have checked in by hard line phone with the swimmers and they are signaling their condition of course is just OK. This couldn't be better and that was quiet obvious. This is Gemini Control Houston.

GUAD The hatch of the spacecraft is open for fresh air. There are no signs of the astronauts however, the port hatch is open. The spacecraft is continuing to ride very smoothly. It is floating upright. The port hatch of the spacecraft is still open. One astronaut is now standing up.Astronaut Young has just stood up in the port hatch and looks fine. The spacecraft is continuing to float very steadily. Astronaut Young is sitting in the torque hatch, he's standing up now. The three swimmers are standing on the flotation collar and to his left.

GUAD Air Boss two, Guadalcanal, do not (garbled)

GUAD The spacecraft is continuing to ride very smoothly. It is upright and three swimmers are descending around the port side of the spacecraft.

This is Houston, the last estimate was on the separation distance about three miles. About three miles off the carrier and I hope that everyone in the News Center at least are still monitoring this excellent communication from downrange. We're going to keep it up.

GUAD The swimmers are indicating thumbs up, the situation is all OK. Astronaut Young is standing - leaning on the port hatch looking as though he's taking the ride very smoothly right now. The three swimmers are standing around the port side of the spacecraft at this time and it's very evident the spacecraft is riding very smoothly. Very little roll.....

END OF TAPE

GUAD .....the astronauts have climbed out of the spacecraft and are now in the raft, looking as though they are taking the smooth ride very nicely. The second swim team is in the water attempting to place a float on the parachute. The spacecraft and swimmers and astronauts are riding very smoothly. No roll, no pitch to speak of. The situation is very static. There is no problem here at this time. There appears to be no problems impending. There's a misquote here it appears the chute is still to the spacecraft. You might have to check that. The swimmers have the swing and are putting it around one of the astronauts. Swim 1 is holding a nice hover. One astronaut is going up at this time. He is approximately half way up. Going up very steadily. He has a flotation .....(static)... He is going up -- is about five feet below the aircraft and is now entering the cargo hatch of Swim 1. The first astronaut is aboard Swim 1. The swing is being lowered back to the raft. The swing is in the water next to the raft. Very nice hover and hoist by Swim 1, commanded by Lt. Cmdr. Bruce Fleming. The second astronaut how has the horse collar on and a flotation vest. Swim 1 is .....

This is Houston. We have one astronaut already in the helicopter. The second astronaut is now in the horse collar and will be hoisted momentarily. We have no identification in what order they descended into the helicopter.

GUAD The second astronaut is airborne, is about one third of the way up, going up nice and steadily, very little movement other than vertical. He is entering the cargo hatch at this time, very smooth hoist. Swimmers have signaled that the capsule is ready for hoisting aboard the Guadalcanal. Swim 1 has departed and is returning to the Guadalcanal.

This is Houston. We have a report from downrange that the R&R section -- the upper front nose of the spacecraft did sink before the swimmers could get to it. We try to recover this if possible. Today, we did not recover. It appeared though, however, they did recover the chute. This is Houston.

GUAD Swim 1 and Photo 1 are making their approach to the Guadalcanal at this time. A very close landing for the astronauts.

From the deck of the Guadalcanal we are advised the band onboard has struck up a tune -- "It's a Big Wide Wonderful World." The helo should be onboard within a minute or two.

END OF TAPE